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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or genera matters should be addressed to the Manager.

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Cleaning Up the "City"

THE result of the Hatry trial and the appropriate sentences passed on the chief performer and his associates will do much to cleanse the atmosphere of the "City." No chemical engineer engaged in the scrubbing of gases could have performed the cleansing operation more thoroughly than Mr. Justice Avory did, both in his summing up and in the terms in which he sentenced the prisoners. His clear and cold analysis of the deadly effects of such crimes on public confidence worked like a solvent on the fanciful pictures the eloquent advocates drew of the prisoners' high-minded concern for the investing and business public. It is true that the four men made no permanent gain out of the transactions which had such disastrous effects on others, that, having made their first confession, they assisted in elucidating the financial position, and that they appreciated the fact that their names would become a byword. These things testified to the survival in them of some sense of decency, mixed with morbid egotism, but they constitute no excuse for the wicked offences of which they were found guilty, and no ground for watery sentiment over their punishment.

The ordinary burglar or bag-snatcher, in comparison, is a straightforward craftsman. The offence of these men lies not in the mere amount of which they swindled banks, corporations, experienced financial firms, and the investing public, though this in itself involved colossal losses which extended in circles. In lodging blocks of valueless share certificates as security for loans and in fabricating high-class securities like Corporation scrip and putting worthless stuff into business currency, they struck at the very foundations of British credit. The combined daring and cunning of their plan lay in the calculation that so unprecedented a fraud would not be suspected. They deliberately exploited the good faith and the high standards of probity on which the credit of our finance and business life rests. Theirs was no case for sentiment or weakness; it was one for exemplary punishment, and the law has fearlessly enforced it.

Thoughtless people appear to find some amusement in the spectacle of joint stock banks and big financial houses being tricked and involved in heavy liabilities. This is surely a callous and stupid way of viewing the case. The banks have been so often criticised for not giving sufficient accommodation to those who needed their financial aid in big operations that their readiness to respond in this case should not be perverted into an indictment of their methods. Moreover, the banks are the custodians of the savings of poor people, and though they are, fortunately, strong enough to stand the loss in this case, the damage, had they been unequal to the strain, would have fallen on their customers.

The effects of these immense frauds cannot be expected to disappear at once. But at least the worst of the mess has been cleared up, and the way to a restoration of confidence opened. The case is a warning not only to operators on the large scale, but to their lesser imitators, who organise deals in big businesses about which often they know little or nothing, and whose only interest in such matters is purely financial. Also, it may result in men bearing names of repute exercising increasing care as to their business associates and any use that may be made of their names in company flotations and similar ventures. The Law Courts and the City have met and dealt with an unprecedented situation in accordance with the best traditions of this country, and the net result should be a return of confidence in the sound principles of finance on which British credit and business rest.

Dr. Levinstein's Speeches

DR. HERBERT LEVINSTEIN, the President of the Society of Chemical Industry, is setting a high standard of activity in the addresses he is delivering in various parts of the country. On Friday of last week he delivered, before the Institution of Chemical Engineers in London, an extremely interesting lecture on "Films and Fibres derived from Cellulose," in the course of which he hazarded a prophecy that synthetic cellulose may be one of the chemical achievements of the future. The exhibits of early samples of artificial silk and more recent productions in the shape of cellulose film reminded the audience of the stages through which the cellulose industry has reached its present dimensions, and some demonstrations at the close indicated the advances already made in research and experiment towards the production of a non-inflammable type of film.

On the following evening, addressing a joint meeting of the Midland Chemists at Birmingham, Dr. Levinstein made the interesting announcement that a deputation had just waited on the Financial Secretary to the Treasury to urge the case for a Government grant towards the erection of a central headquarters for mining, metallurgical and chemical organisations in London. This subject has long been talked of, but at last, though little is said about it publicly, it is understood that something practical may be attempted. Such a claim would, no doubt, be received with sympathy by the Government, but the times are not propitious for new commitments, and we shall wait with interest to hear what the Chancellor of the Exchequer has to say about it.

Next Monday, Dr. Levinstein returns to London to deliver before the London Section of the Society an address on "Chemical Disarmament," a subject of provocative interest in view of the conference on naval disarmament now in progress. For this occasion, the meeting is being opened to visitors—a wise and natural proceeding in view of the fact that the appeal of such an address must obviously be to public, and especially political, opinion. The moment chosen for such a statement is noteworthy. Even a dull speech on chemical warfare at such a juncture could hardly fail to be interesting; and Dr. Levinstein would find it difficult to be dull in any case. What line of policy he has decided to take will not be known until Monday evening, but one may safely predict, whatever his conclusions, that his address will be well worth hearing.

Benn Brothers' Jubilee

THE Benn Brothers' jubilee dinner, which takes place this evening (Saturday) in the Wharncliffe Rooms, London, promises to be the most impressive anniversary in the history of the British trade and technical Press. The 450 guests will include not only the headquarters staff at Bouverie House and representatives from all parts of the Kingdom, but members of H.M. Government, representatives of foreign states, many distinguished publishers, authors, and journalists, and leading members of the numerous industries served by the firm's journals. Sir Ernest Benn will preside, and the toasts will include "Fleet Street," proposed by Sir W. Plender and responded to by Dean Inge, of St. Paul's; "The Firm," proposed by Mr. Walter Runciman, M.P., and acknowledged by the Chairman; and "The Staff," proposed by Mr. John Benn and acknowledged by Mr. J. A. Knivett (*Hardware Trade Journal*) and Mr. Mortimore Sparks (*Timber Trade Journal*). A notable feature of the occasion will be a group of junior members of the staff, dressed in costumes indicative of the industries covered by the firm's publications.

Many things will, no doubt, be said during the evening of the remarkable history of the firm since its foundation in 1880 by the late Sir John Benn, whose first success was the establishment of *The Cabinet Maker*. Every year during the past half century has witnessed some advance and expansion, and the firm has the proud record to-day, on its fiftieth birthday, of occupying the strongest position in its career, with a board of directors wholly composed of working members of the staff. Its record may, indeed, be attributed, in conjunction with the amazing initiative and wise guidance of its Chairman (Sir Ernest Benn), to the fact that the business throughout has been managed by those directly engaged in it and familiar with all its details. There will be further celebrations later, including the publication of a special supplement in all the Benn journals, but the jubilee dinner to-night will be sufficient to demonstrate what Benn Brothers, Ltd., have done for the trade and technical Press of this country, and for the industries that their journals have so long served.

The Calendar

Feb.		
3	Society of Chemical Industry (London Section): "Chemical Disarmament," Dr. H. Levinstein. 8 p.m.	Institution of Mechanical Engineers, Storey's Gate, London.
3	University of Birmingham Chemical Society: "The Colloid Micelle." Professor F. G. Donnan.	University, Birmingham.
4	Institute of Metals (Birmingham Section): "Nickel Casting Alloys." John McNeil. 7 p.m.	Chamber of Commerce, New Street, Birmingham.
5	Society of Public Analysts. 8 p.m.	Burlington House, Piccadilly, London.
6	Chemical Society. 8 p.m.	Burlington House, Piccadilly, London.
6	Royal Society. 4.30 p.m.	Burlington House, Piccadilly, London.
6	Society of Chemical Industry (Bristol Section): "Rationalisation." J. Davidson Pratt. 7.30 p.m.	University, Bristol.
6	Society of Chemical Industry (Nottingham Section): Annual Meeting. 7.10 p.m. "The Application of Submerged Combustion." C. Featherstone Hammond. 7.30 p.m.	University College, Nottingham.
7	Society of Chemical Industry (Birmingham and Midland Section). Joint meeting with Chemical Engineering Group. "Electric Furnaces for Heat Treatment." A. G. Lobley. 6.30 p.m.	Chamber of Commerce, New Street, Birmingham.
7	Society of Chemical Industry (Manchester Section). Joint meeting with the Institute of Fuel. "The Fundamental Problems of Flue Gas Purification." Professor M. W. Travers. 7 p.m.	17, Albert Square, Manchester.
7	Society of Chemical Industry (South Wales Section): "Nickel Alloys in Modern Engineering." W. R. Barclay.	Thomas's Café, High Street, Swansea.
12	Institute of Fuel: "Oil Cracking." W. H. Jones.	Burlington House, Piccadilly, London.

Films and Fibres Derived from Cellulose

A Lecture by Dr. Levinstein

Dr. Herbert Levinstein, the president of the Society of Chemical Industry, in a public lecture which he delivered to the Institution of Chemical Engineers, in London, on Friday, January 24, dealt with the subject of "Films and fibres derived from cellulose." Mr. J. Arthur Reavell (president of the Institution of Chemical Engineers) was in the chair.

In introducing Dr. Levinstein, the chairman referred to his distinction as a chemist, and to the important part he had taken in applying science in many commercial fields.

In the course of his address, Dr. Levinstein suggested that just as this country to-day obtained its supplies of nitrogen from the air, for artificial fertilisers and other purposes, instead of having to import natural nitrate or saltpetre from Chile, as was done previously, so we might presently obtain by similar synthetic methods illimitable supplies of cellulose—the raw material of paper, artificial silk, explosives, etc.—from the air instead of from the forests of the world.

Dealing first with the theory of the subject, Dr. Levinstein said that the raw material, cellulose, the principal constituent of all plant walls, was a typical colloidal gel; in this lay all its merits and most of its problems. Its chemical formula was $(C_6H_{10}O_5)_n$, in which "n" represented not only an unknown and probably variable quantity, but an unknown and probably variable quality or complexity. After thirty years of constant work we were at last taking a speculative peep at "n," the unknown.

It was known that cellulose was built up of glucose units or bricks. The constitution of cellulose had recently and finally been proved by Haworth to consist of a six-atom ring in which five carbon atoms and one oxygen atom were linked together in cyclic form. This gave the first clear starting-out point for deducing the constitution of cellulose.

A Series of Compounds

After discussing further the discoveries of other workers in this field, he said we arrived at the conclusion that cellulose was not a definitely characterised chemical individual. It was the collective name of a closely related series of compounds which by imperceptible gradations merged one into another. In short, it was the name of a solid solution of many polymers.

Bleaching or preparing cellulose or dissolving it in liquids might greatly affect this complicated equilibrium of isomers which one could compare to that existing in tannins and gelatine, which were also typical colloids existing in many closely related forms. The industrial consequence met one at the very outset. A buyer could not purchase gelatine and be sure that it would do for photographic purposes until a sample from bulk had been treated in the laboratory and found suitable. Similarly, one could not purchase bleached cotton linters on a specification and be sure that they would give an acetate of suitable viscosity.

It was not unreasonable to expect, as had indeed been shown on the basis of the micelle theory, that a definite orientation of the units within the cellulose aggregate would give definite physical properties in the final product, the fibres or films. Once we understood this relationship fully it might well be possible, by mechanical or chemical treatment of the fibre during or after precipitation, to produce at will an ordered orientation of the micelles so that fibres and films of improved, and, perhaps even more important, of more constant and uniform physical properties, would result.

The Synthesis of Cellulose

If a study of the micelle theory suggested the possibility of obtaining a more constant product, it was not the only avenue of approach to this question. The living cell in the plant built up its cellulose from CO_2 and water through sugars, which later were polymerised to cellulose. Baly and his co-workers had synthesised sugars from CO_2 and water. This synthesis was of great interest, as it reproduced in the laboratory, however inadequately, one of the fundamental reactions of the living plant cell. That this synthesis would be developed in the coming period of chemistry was obvious. It would remain for us to discover the means to aggregate these sugars to enable us to synthesise a cellulose. If this synthesis were controlled the product would have a definite and probably uniform composition, or, if not a uniform composition, certainly a different composition from any known cellulose.

At his request, Mr. J. M. Preston had made careful calculations regarding the quantity and nature of the energy required for this synthesis. It would appear that about 8·8 kilowatt-hours would be required to produce 1 kg. of synthetic cellulose, so that even at ½d. per unit the power cost would be of the order of 1d. per lb. With a favourable power supply it seemed that synthetic cellulose would be produced at less cost than wood pulp.

Rayon

As cellulose nitrate was the first soluble derivative of cellulose to be practically available, so naturally it was the first to be used for making films and fibres. Count Hilaire de Chardonnet, in 1884, had prepared from it the first artificial silk to be put on the market. In spite of early failures he had succeeded in establishing a 6 million franc company at Besancon in 1884 for the manufacture of his artificial silk. Dr. Levinstein pointed out, however, that Sir J. W. Swan, a former President and Medallist of the Society of Chemical Industry, had actually preceded Chardonnet, but had not developed his invention.

In 1906, he said, there were already twenty-two artificial silk works in Europe. There were at the present time 129 firms producing viscose rayon, thirty-three producing acetate, eighteen producing cuprammonium and only nine making nitrocellulose yarns. He dared say that this number of silk firms was too large, and had little doubt that we should see a reduction in that number very shortly, if only on account of the economic conditions persisting in the industry.

Cellulose acetate was first prepared by Schutzenbrger in 1865. Thirty years had elapsed, however, before the first method for its commercial preparation was patented by Cross and Bevan, and in the initial exploitation of the substance a considerable amount of money was lost. Viscose was discovered in 1892 by the Englishmen, Cross, Bevan and Beadle, the discovery being followed, in 1894, by the formation of the Continental Viscose Co. Lilienfeld viscose silk, a new viscose which might become important on account of its strength, was prepared in a manner which was in general principle similar to that used in making ordinary viscose. The chief difference lay in the fact that the viscose solution was ripened for a shorter time, and that a bath containing much more concentrated sulphuric acid was used for precipitation.

Thiourethanes

Another class of cellulose derivatives, patented by Lilienfeld in 1924, and which might some day find technical application, was that of the thiourethanes. The reactions, which were surprising, went extremely well, and could be readily carried out in bulk quantities. A solution of viscose was treated with an aqueous solution of a monochlor-fatty acid—for example, monochlor-acetic acid—and the resulting easily soluble sodium salt with or without previous isolation was converted into the urethane by condensing it with aniline or a secondary amine. From the thiourethane a very strong, though rather brittle, silk had been spun. It had the dyeing properties of an animal fibre, and therefore could be dyed with the usual acid dyes. No technical developments had yet taken place in this product, but on account of its unique dyeing properties, and the ease and elegance of the reaction, it deserved mention.

With regard to cuprammonium cellulose, he said the solvent action of ammoniacal copper hydroxide (Schweitzer's reagent) upon cellulose was observed by Schweitzer in 1857. The first large-scale developments were initiated by Despeissis in 1890, and Pauly was generally credited with their further exploitation (in 1897). An advantage of cuprammonium silk was that it was obtainable in very fine filaments with a soft, silky lustre.

It was estimated that the world's production of artificial silk in 1929 amounted to 403 million lb. Of this, 80 per cent. was viscose, 8 per cent. acetate, 5 per cent. cuprammonium, and 4 per cent. Chardonnet.

The final part of the lecture concerned cellulose films. These could be classified conveniently according to thickness (in " mils " or thousandths of an inch), and there were a variety of uses for thicknesses, ranging from 0·5 mil to 120 mils, covering cigarette tipping, photography, the making of splinterless glass, and its use as a substitute for glass. Dr. Levinstein dealt particularly with the 3-mil, 5-mil and 7½-mil nitrate and acetate films, which were the principal photographic films and form by far the most important items in the film business.

Cine Film

The consumption of 5-mil cine film in this country was reputed to be in the neighbourhood of 300 million feet of standard width, and this was but a fraction of the amateurs' film requirements. The total world consumption reached almost astronomical figures, and was growing at a rapid rate. The firms engaged in the industry were few in number, one of the reasons being the complications of the manufacturing process and the extreme caution which must be exercised in manufacture if troubles which were fatal to good photography were to be avoided.

After discussing the details of manufacture, Dr. Levinstein said the acetate film was not used extensively for amateur work, but was finding increasing use in X-ray work. The nitrate film was somewhat stronger than the acetate, both in the dry and wet conditions. Nitrate film was perhaps more fool-proof than acetate, and, speaking generally, the photographic process man in the cinema trade preferred the nitro, at equal prices. The consumption of acetate film, however, had recently made great progress, but had not accomplished the rapid conquest of the photographic industry which was at one time confidently anticipated. New fields were opening up for acetate film, however, where nitro film would obviously be unsuitable, such as for the home cinema, for hospital X-ray work, schools, and so forth.

Non-Flam Film

An interesting feature of the meeting was an exhibit of early samples of artificial silk made by various processes, dating from the first sample of viscose silk prepared by Crosse and Bevan. There was actually in operation during the address a small machine in which film was being manufactured, and a collection of non-inflammable film products. A film was shown on the screen that strikingly illustrated some fire tests applied to ordinary celluloid and film produced by the Non-Inflammable Film Co. It was a surprise, probably, to most present to find that research and actual production had proceeded so far and so successfully in the latter field.

The Problem of Fading

Dr. S. G. Barker's Address

THE causes of the fading of textiles and the methods of its measurement were dealt with at University College, Nottingham, on Wednesday, January 22, by Dr. S. G. Barker, of the Woollen and Worsted Research Association. This lecture was under the joint auspices of the Society of Dyers and Colourists and the Society of Chemical Industry.

The lecturer said that at present no satisfactory standards of fading existed. Germany had certain standards but they were unsatisfactory; America seemed to be "waiting to see which way the cat was going to jump," although some excellent experimental work had been done, and it was felt that we in England ought to have our own standards. It was very easy to say that fading was due to this, that and the other, on very slight evidence. Half the time when we were talking about fading we found that we did not really know what we were talking about. It was said that light caused fading. Light alone would not fade, although light was an accessory.

Fading required light plus atmosphere, and by atmosphere he meant temperature, humidity, and atmospheric impurities. Speaking of the difficulties of arriving at any generally accepted standard, Dr. Barker said that experiments in fading had been carried out all over the world, in California, in Ceylon, and in many other places, and the result had been chaos.

The lecturer then dealt with the experiments that had already been made by the Woollen and Worsted Research Association in order to provide standards with regard to fading for the trade in this country. Temperature, it had been found, had a very profound effect on fading.

Chromium Plating

An Account of Present Practice

THE process of chromium plating was described in a paper by Mr. E. J. Dobbs, chief chemist to W. Canning and Co., Ltd., Birmingham, before the Birmingham and Midland Section of the Society of Chemical Industry, recently.

Most chromium plating baths contained sulphates, said the author, whether added as chromium sulphate, as sulphuric acid, or as sulphate of metals other than chromium, as the sulphate anion was the most efficient in the maintenance of bright deposits and was without action on the lead anodes usually employed. Salts of halogen acids had been used, and had been the subject of patent matter, but their use caused considerable solution of the lead anodes employed, the halide salts of lead being soluble in the hot, with the rapid formation of lead chromate and consequent rapid disintegration of the anode surface.

The Anion

The part played by the anion during electrolysis was imperfectly understood. Although chromium could be deposited from solutions containing no acid ion other than chromic acid, the resulting deposit was a failure from a commercial point of view, the brilliancy being marred by iridescent markings on the deposit, due, Mr. Dobbs believed, to reduced hydrated chromium oxide being interspersed in the deposit of the metal. Under certain conditions of temperature and current density employed, a yellowish brown film was obtained, which dissolved readily in sulphuric acid and exposed metallic chromium.

Such deposits appeared to be formed through a diaphragm of chromium chromate, and did not compare in brilliancy with those obtained from similar solutions containing an acid radicle.

Efficiency

The cathode efficiency ranged from about 35 per cent. obtainable under special circumstances consistent with low temperature of electrolyte, current density employed and a non-lustrous deposit, to as low as 5 per cent., when a low current density was used with an applied voltage very close to the decomposition voltage of the solution. The efficiency of the solution generally was governed by the temperature employed and the current density used. The highest efficiencies were obtained at about 10° C., but the result was a non-lustrous deposit, although the permissible cathode current density was extremely high before "burning" occurred. No great advantage was secured by the use of temperatures far above 40° C., as the efficiency fell rapidly with rise of temperature until at about 65° C., very little deposition occurred, whatever the current density.

Failure to chromium plate might be associated with too high a sulphate content of the solution or too high a temperature consistent with the current density used. Excess sulphates should be removed. Burning at low current densities and failure to "throw" was evidence of excessive accumulation of reduced chromic acid in the bath, or the presence of foreign metals dissolved by the solution.

Death of Professor T. B. Robertson

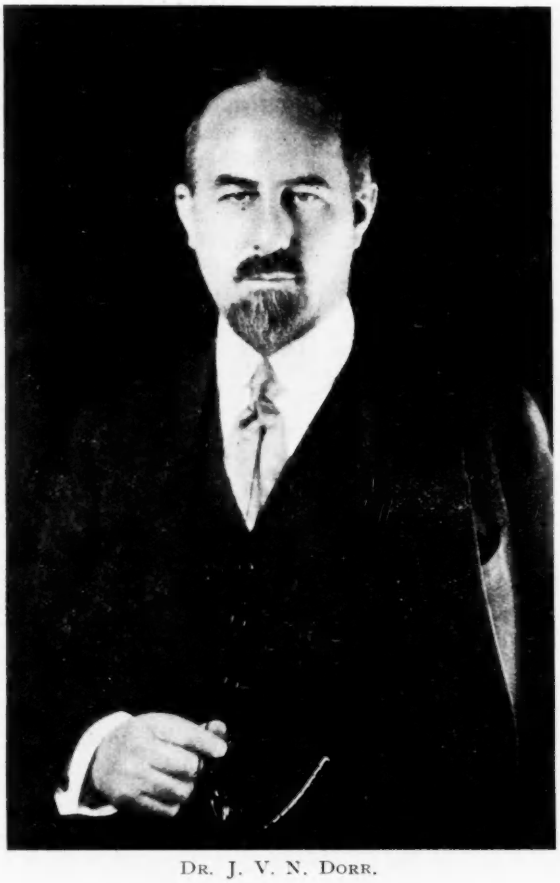
THE death is announced, in Australia, of Professor Thorburn Brailsford Robertson, professor of biochemistry and general physiology at the University of Adelaide, at the age of 45. Born in Edinburgh in 1884, he was educated at Adelaide. In 1904 he went to California University to work with Jacques Loeb, whom he succeeded there as professor of biochemistry in 1916, after occupying various other posts. After a short period in the chair of biochemistry at Toronto, he went to Adelaide in 1920. He published numerous papers on biochemical subjects, as well as several books, the latter including *The Physical Chemistry of the Proteins*, *Principles of Biochemistry* and *The Chemical Basis of Growth and Senescence*. A few years ago he was appointed by the Commonwealth Council for Scientific and Industrial Research to organise and develop research work for the improvement of animal husbandry in Australia. He was a member of various scientific societies, and a Foreign Member of the Accademia Nazionali dei Lincei of Rome.

Medal for Dr. J. V. N. Dorr

Award by American Institute

DR. J. V. N. DORR, the eminent chemical and metallurgical engineer, and president of the Dorr Co., has been awarded the James Douglas Medal of the American Institute of Mining and Metallurgical Engineers, in recognition "of his invention of apparatus and achievement in developing and improving hydrometallurgical practice." This medal, awarded annually for distinguished services in non-ferrous metallurgy, commemorates Dr. James Douglas, twice president of the A.I.M.E. and founder of the Phelps Dodge enterprise, and will be presented formally at the annual convention of the Institute in New York this month.

After an early association with chemistry in the laboratory of Thomas A. Edison, Dr. Dorr graduated from Rutgers



DR. J. V. N. DORR.

University and engaged in metallurgical work in the Black Hills of South Dakota and in Colorado, inventing and developing there the classifier, thickener and agitator which bear his name. The equipment and methods initially introduced by Dr. Dorr in the metallurgical industry have since been widely adopted by the heavy chemical industry, in many branches of which their use has become virtually standard practice for the mechanical handling of mixtures of finely divided solids suspended in liquids. He and his company are widely known throughout the world, the company's British headquarters being at Abford House, Wilton Road, Victoria, London.

The development of the equipment early invented by Dr. Dorr and the research necessary to utilise it to the best advantage in the many industries whose practices have subsequently been improved through its use, led to the building up of an international industrial organisation with branches and affiliations in all parts of the world. Dr. Dorr is president of the Dorr Co., Inc., of the United States, and the head of associated companies in London, Paris and Berlin, and has established representation in South Africa, Australia and Japan.

It was in recognition of his contributions to hydrometallurgical practice that he received the John Scott Medal of the Franklin Institute in 1916. In 1927, Rutgers University, which he had long served as a trustee, conferred upon him the honorary degree of Doctor of Science in consideration of his important contributions to the chemical and metallurgical industries. He has always taken a keen interest in the professional chemical societies, having long been a member of the American Chemical Society, the American Electro-Chemical Society and the American Institute of Chemical Engineers, and having been in the past an officer of the last two. He recently returned from Japan, where he attended the World's Engineering Congress in Tokyo as an official delegate of the Engineering Foundation and the American Institute of Mining and Metallurgical Engineers.

The Chemical Society's Silver Mace

Some Notes on the Design

WE are indebted to Thomas Wordley, Ltd., silversmiths, London, for the following interesting notes on the silver mace that has just been presented to the Chemical Society by Mr. A. H. Hooker (as reported in THE CHEMICAL AGE of January 18 and 25) :—

"The design of the mace we have manufactured is based on the earlier form of war mace, which, it is interesting to note, was on an average length of 2 ft. Apart from war maces, civic maces may be divided into two classes :—1. Sergeant, or small, maces carried by the Sergeant-at-Mace as emblems of authority; 2. Great, or Mayor's, maces borne before the Mayor (or Bailiff) as a mark of dignity and a token of the Royal Authority vested in him. For this reason, it is interesting to note in the case of some of the earlier Great Maces that the Royal Arms were sometimes placed in the broad button at the lower end of the mace, and in this way some of the earlier maces were carried the reverse way up.

"The design of the mace in question is elaborated from the Early War Maces which had a flanged or bladed end. This in our design is replaced by the head of a Corinthian column, on which is mounted the symbol of the Society, the figure of a woman rising from flames with the circular supporter bearing the title of the Society and forming a balance to the head of the mace. The projecting brackets are peculiar to maces of the fifteenth and sixteenth centuries and the foot knop is handsomely chased and finished with a silver knob. Cast brackets which are mounted on the flanges (the latter being richly embossed), whilst being peculiar to the earlier maces, were at a late date discontinued on the smaller or Sergeants' Maces owing to the liability of the projecting ornaments to catch in the Sergeant's dress when these maces were carried in girdle or pocket and required to be produced when necessary to prove authority. The encircling bands on the centre of the mace are for the purpose of inscribing names. The whole mace is of solid silver, with the exception of the ebony staff, and rests on an ebonised plinth which bears an inscription plate of the same metal.

"The design of the mace is unique, and at the same time interesting, having the size and dignity of the larger Civic Maces, but at the same time retaining the appearance of the earlier maces."

Rayon Works for Preston

COURTAULDS, Ltd., artificial silk manufacturers, who have been prospecting for a site for works in the neighbourhood of Preston, have now, it is said, definitely decided upon the third site inspected. This is situated to the east of Preston and near a famous Ribblesdale beauty spot known as the Horse Shoe Bend. Last year the Preston Town Council and representatives of Courtaulds had numerous conferences, and township meetings were held at Grimsargh and Ribbleton, both of which would be affected by an industrial development of such magnitude, and these made it clear that there would be no opposition on the part of the villages named. Courtaulds are reported to be purchasing land, but it does not follow that the necessary works will be immediately proceeded with. If Courtaulds go to Preston it is computed that work would be provided for about 3,000 people.

Publicity and the Chemical Profession

To the Editor of THE CHEMICAL AGE.

SIR,—*Apropos* of Mr. Rhodes's letter on the above subject in THE CHEMICAL AGE of January 25, it may interest both the author of the letter and your readers to know what is being done in Leicestershire with regard to this matter.

In an attempt to bring the fundamental ideas concerning the chemist and his place in the community before the public a series of twenty-four lectures is being given entitled "Chemistry of Everyday Life." The lectures are being given under the auspices of the Adult Education Committee (with which is associated the Workers' Education Association), and in these lectures I have tried to give some idea of the enormous part played by the chemists of the country in industry. So far, thirteen lectures have been given, and the class is still enthusiastic, many of the members walking no inconsiderable distance to the schools at Hugglescote, where the lecture is given.

I am aware, of course, that the giving of a series of lectures in a comparatively remote Leicestershire town is in itself a small thing. It is, however, a beginning, and has shown us conclusively two things, namely, that members of the public are definitely interested in the chemist and his activities. They learn, with no little wonder, that he is behind such basic industries as food, coal products, steel, artificial silk, etc., and that he is responsible for advances in medicine and art. In the second place, it has shown definitely that there is a place for chemical publicity in the programme of adult education. What is wanted is a discussion of the place and function of the chemist in the community. The layman is ready and willing to appreciate this, but any attempt to "stuff" him with a watered-down and simplified edition of the *facts* of chemistry is foredoomed to failure.—I am, etc.,

G. MALCOLM DYSON.

Loughborough,
January 29.

A Fire at Dudley Port

To the Editor of THE CHEMICAL AGE.

SIR,—Will you permit me to refer to the reports which have appeared in the Press of the fire which occurred at this company's works at Dudley Port on the night of January 28, and, through you, to inform the numerous customers of this company, who are making inquiries, that although the fire was spectacular no considerable amount of damage was done. It will not interfere in any way with supplies to our customers.

Thanks to the prompt action of the fire brigades the damage was confined entirely to the Melanoid paint packing sheds, and none of the Monsol plant was involved. There has, therefore, been no delay in filling orders for any of the company's products, whether Melanoid paint, Monsol preparations, tar, pitch or oils.

Thanking you for your courtesy in allowing me to make this statement, I am, etc. (for the Mond Staffordshire Refining Co., Ltd.),

W. J. U. WOOLCOCK,
Managing Director.

Abbey House, Westminster, S.W.1.
January 29.

Research as a Career

To the Editor of THE CHEMICAL AGE.

SIR,—It is very interesting to note the remarks of the Rector of the Imperial College upon the subject of the general educational qualifications of Honours Graduates in Science. That his criticism is justified is borne out in our experience.

This Association, which is called upon to deal with a large number of important appointments through its Appointments Bureau, has repeatedly drawn attention to the manner in which applications are drawn up. Employers frequently tell us that the form of the application is the criterion by which the applicant is judged. It must be brief, lucid, and pertinent—in a word, business-like, and expressed in good English. These things, we are informed, are as important as, and in some cases are judged to be more important than, scientific qualifications.

On the face of it, this may appear harsh, but the research worker in industry has to remember that it is with the business man that he ultimately has to deal. If it is true, as Mr. Tizard states—and we are afraid it is true—that many young men think that the occupation of trying to apply scientific knowledge is something degrading and ignoble, then there is something very wrong with the attitude of the research worker. It accounts for everything—poor applications, poor reports, feeble contact between industry and science.

It accounts further for the failure of scientific publicity. We have asserted before that scientific men ought not to despise journalism, and it is the fact that they do which makes the relation between science and the public one of misunderstanding. The applicant for a post or the writer of a report is in the same position as the journalist: he has to interest his reader. The matter he has to offer may be excellent, but it will not appear so unless he has learnt how to present it.—I am, etc.,

HENRY T. F. RHODES.

British Association of Chemists,
Empire House, London, W.1.

Chemical Engineering Group

Joint Meeting with Birmingham Section of S.C.I.

THE next meeting of the Chemical Engineering Group will be held in Birmingham jointly with the Birmingham Section, on Friday, February 7. The following programme has been arranged:—2.15 p.m., visit to the Landor Street Works and, if time permits, the Wilton Works of the General Electric Co., Ltd., by the kind permission of the Directors of the Company. Rendezvous at Exchange Buildings, Stephenson's Place, Birmingham. Special conveyances (cost per head about 1s.) will be arranged. At 6.30 p.m., in the Chamber of Commerce, New Street, Birmingham, Mr. A. G. Lobley will read a paper on "Electric Furnaces for Heat Treatment." He will give a brief general comparison of costs and efficiencies of electric and other furnaces, and will also deal with the development of the modern electric resistance furnace, with examples of new types and with American electric furnace practice. At 8 p.m. an informal dinner (4s. per head, exclusive of wines) will be held at the White Horse Hotel, Congreve Street, Birmingham.

For those travelling from London there is a convenient train from Euston (depart 11.30 a.m., Birmingham (New Street) arrive 1.30 p.m.). A restaurant car is attached to this train. Provided sufficient members participate, return tickets at the cost of single fare and a third can be arranged, if adequate notice be given. Members desiring to be present should notify the secretary of the Group, Mr. W. F. Darke, by midday, Tuesday, February 4.

Meeting of Society of Glass Technology

AT a meeting of the Society of Glass Technology, held in Sheffield on Wednesday, January 15, three papers were presented.

"The Influence of Manganese Oxide on Some Properties of Glass," was discussed by A. A. Childs, Violet Dimbleby, F. Winks, and Professor W. E. S. Turner. In order to investigate the effect of manganese oxide in some of the properties of glass, three series of glasses were made, the melting being carried out in open sillimanite pots. The materials used were sand, limestone, soda ash, manganese dioxide, hydrated alumina, and ferric oxide. Among the properties investigated were melting and working properties; colour and chemical durability. The percentage losses in weight of all the glasses in powder form, when boiled for one hour in water, according to the standard method employed in the department, were determined, along with the soda extracted in the test. The percentage losses in weight of the glasses when boiled in hydrochloric acid, sodium carbonate, and caustic soda, were also determined. The results showed that the replacement of soda by manganese oxide was in all cases beneficial.

The other papers read were: "Note on the Formation of Sodium Sulphate in Glass Tank Furnaces," by Professor W. E. S. Turner; and "The Physical Properties of Soda-Silica Glasses. Part I. The Thermal Expansion," by Professor W. E. S. Turner and F. Winks.

Prevention of Corrosion of Lead in Buildings

A Building Research Report

Building Research Technical Paper No. 8, "The Prevention of Corrosion of Lead in Buildings," by F. L. Brady, has just been issued by the Department of Scientific and Industrial Research (H.M. Stationery Office, 1s.). Below appears a summary of the paper.

LEAD is a metal the chemical properties of which, at first sight, appear to be somewhat inconsistent. Towards strong hydrochloric and sulphuric acids it shows a high degree of resistance; it is, in fact, used for lining chambers used in the manufacture of sulphuric acid; on the other hand, it is rapidly attacked by dilute organic acids.

Oxygen in the presence of moisture oxidises lead quite readily, and when very soft water is carried by lead pipes the metal may be dissolved and the water become injurious to health. Ordinary hard waters do not dissolve lead, since they contained carbon dioxide, either in a state of loose chemical combination or in solution, and this forms a film of lead carbonate around the inside of the pipe and protects the lead from further attack. Soft waters from peaty catchment areas contain humic acids and are especially corrosive of lead pipes.

Behaviour in the Atmosphere

Lead freely exposed to the atmosphere is very durable and is valuable for roofs, gutters, etc. It is not oxidised, except superficially, because constituents of the atmosphere, carbonic and, probably, also sulphuric acid, form protective films which prevent further oxidation.

The general facts given above relating to the durability of lead are common knowledge, but there are other special conditions to which lead may be exposed in buildings, the effects of which are not so generally realised.

Corrosion by Lime and Cement

For a long period it has been known that mortar is capable of corroding lead, but the fact is frequently overlooked, with distressing results. As an example, reference may be made to a corroded lead damp course sent to the Building Research Station for examination. The damp course had been laid in a 9-in. brick parapet wall, there being two courses of bricks bedded in cement above, surmounted by a Portland stone coping. When the wall was taken down after 15 years the lead was found to be partially destroyed. The 5 lb. lead had been converted on the upper side to a brittle mass of lead oxide, leaving in places only a paper-thickness of metal. A comparison of this with several other instances indicates that where lead is bedded in cement mortar corrosion may penetrate the sheet at the rate of about 1/200th in. per year.

The cause of such corrosion has been investigated and it has been shown that the effect is due to the combined operation of moisture, oxygen, and lime, derived either from lime mortar or from Portland cement mortar. When exposed to the atmosphere, lead quickly develops a protective film of lead carbonate; but this does not necessarily occur when lead is placed in contact with cement, as any carbon dioxide in solution is removed by interaction with the cement or lime. Of course, with the passage of time, the action of atmospheric carbon dioxide converts the lime in the mortar to calcium carbonate and the mortar is then innocuous.

Prevention

The architect and the builder are principally interested in the conditions under which danger of corrosion is to be feared, and in the methods of prevention.

When lead damp courses are inserted in thick masonry or brick walls, and especially if Portland cement mortar, which carbonates more slowly than lime mortar, is used, some protection of the lead is desirable, since in the heart of the wall the lead may be exposed to lime for a sufficient length of time to allow complete destruction to occur before the process of carbonation, proceeding inwards from the surface of the wall, renders the mortar inert. A suitable grade of bitumen will afford this protection, or, alternatively, a compound damp course, composed of layers of bitumen-impregnated felt and lead sheet may be used.

It should be unnecessary to point out that the use of a composite damp course in which a cover of bitumen is an excuse for reducing the lead to something approaching foil thickness is to be strongly deprecated. In passing lead pipes through walls, where it is desired to make good with cement, the pipe may be protected by a layer of bitumen felt. Another method of dealing with pipes is to pack loosely with old lime mortar and then to make up the ends of the hole with a coating of cement mortar.

Tests have shown that aluminous cement, owing to its low content of free lime, is not so harmful to lead as Portland cement and lime. The substitution of this cement for Portland cement in placing lead damp courses, etc., would be an advantage.

Corrosion by Timber

Serious corrosion is frequently caused where lead is used in contact with timber. A typical case of such contact is in roofs where sheet lead is laid over oak boarding. Oak is, in fact, the timber which most frequently causes corrosion of lead, although soft woods are capable of causing similar effects in a less degree.

Small scale tests and the examination of old buildings have shown that the corrosion is due to moisture acting in conjunction with atmospheric carbon dioxide and organic acids from the timber. These acids resemble acetic acid in their action. Chemically, the action is analogous to the Dutch process for the manufacture of white lead; the metal is, in fact, converted into basic lead carbonate.

It may be mentioned here that the use of lead in any situation where it will be exposed to the fumes of acetic acid is obviously inadmissible. This caution may be thought superfluous, but actually a case has been reported where lead-covered metal glazing bars had been used in the roofs of a pickle factory; severe corrosion occurred with the formation of poisonous dust of white lead.

Effect of Moisture

The presence of moisture is the controlling factor in the corrosion of lead by timber. Where moisture is excluded, even though lead is in contact with oak potentially corrosive, no attack will occur.

It will be evident that any minor modifications in construction having for their object the prevention of the penetration of moisture between lead and oak will tend to render the lead permanent. Lead sheets on oak roofs should be thoroughly well laid so that no leakage or creeping of moisture can occur and the roof should be so built as to prevent or minimise condensation between the metal and the timber.

The use of unseasoned timber containing much moisture is to be avoided and every attempt should be made to obtain well seasoned timber for such work. With the poorly seasoned timber now often used in default of better, the safest preventive method is to cover the oak boarding with a layer of bitumen felt. This will hinder moisture containing acids derived from the timber from reaching the surface of the lead.

Corrosion by Soil

From observations recorded in the literature of the subject of lead corrosion it appears that almost all types of soil may cause corrosion of buried lead pipes. But, apparently, under natural conditions, combinations of circumstances capable of causing dangerously rapid corrosion rarely occur. There is then no justification for recommending the general adoption of any practice or practices for preventing the corrosion of lead pipes buried in soil. Some method of protection is, nevertheless, advisable when pipes are to be laid in peaty soil which may contain organic acids capable of causing rapid corrosion; or in made-up ground which may contain coal ashes which yield soluble salts, or decaying vegetable refuse; or in soil which previous experience has shown to be highly injurious.

One method is to pack the pipe round with some substance such as chalk, limestone, or old well-carbonated lime mortar which is known to inhibit corrosion. The use of felt strips, impreganted with bitumen and packed spirally round the pipe, would probably provide adequate protection even in the most dangerous soils. Bitumen paint would afford some protection, the precise degree depending upon the quality of the paint and the continuity of the film.

"Chemistry House" Scheme

Deputation to the Government

THE first dinner to be organised in Birmingham by an independent committee, representative of Midland chemists, was held on Saturday at the Midland Hotel, Birmingham; and was a great success. A statement of more than usual interest was made by Dr. Herbert Levinstein (President of the Society of Chemical Industry) who was the guest of the evening, on the subject of "Chemistry House," London. Among a large and representative attendance of industrial chemists, chemical engineers, manufacturers, managers and merchants, were Dr. Twiss (chief chemist, Dunlop Rubber Co.), who presided, Professor Ling (Birmingham University), Dr. E. W. Smith (representing the Fuel Industry), Dr. Wardlaw and Dr. Carter (Birmingham University), Drs. W. M. Hampton, C. A. Fox, E. D. Mason, Duff, Norris, Pinkard, and Paul; Messrs. George King (who organised the gathering), A. W. Knapp (chief chemist, Cadbury's, Ltd.), H. W. Rowell, J. C. Mann, W. T. Collis, W. A. Benton (Avery's, Ltd.), A. J. Broughall (representative of Chemical Engineering group), J. R. Johnson, A. A. King, D. W. Parkes, A. G. R. Whitehouse, C. F. Bristol, F. R. O'Shaughnessy, A. V. Rhead, and E. C. Rossiter.

Hopes for "Chemistry House"

In submitting the toast of "Midland Chemists," who had, he thought, too many societies, Dr. Levinstein expressed the opinion that they in London were making progress with the scheme for the erection of a large building to be called "Chemistry House." The idea was that it should become the meeting place of the various chemical societies. On the previous day he was a member of a deputation which interviewed the Financial Secretary of the Treasury with the object of securing a grant; and though that gentleman was unable to give an implied or implicit promise the deputation were left not without hope that the Government would not only be sympathetic, but might give practical assistance.

Dr. Levinstein added that he looked forward with pleasure to attending the forthcoming annual meeting of the Society of Chemical Industry in Birmingham. He expressed his appreciation of what Mr. Calder had done to enlist the spirit of co-operation among the various local sections of chemists; and at his suggestion it was decided to send a telegram to Mr. Calder, who is recuperating at Eastbourne after his recent accident, expressing their wishes for his speedy recovery.

The health of Dr. Levinstein was drunk on the proposition of Mr. Knapp.

Chemical Society Meeting

AN ordinary scientific meeting of the Chemical Society will be held on Thursday, February 6, at 8 p.m., when the following papers will be read: "The photolysis of aqueous hydrogen peroxide solutions. Part I. Experimental methods," by A. J. Allmand and D. W. G. Style; "The photolysis of aqueous hydrogen peroxide solutions. Part II. Experimental results," by A. J. Allmand and D. W. G. Style; and "The scisson of diaryl ethers and related compounds by means of piperidine. Part III. The nitration of 2 : 4-dibromo-2^1 : 4^1-dinitrodiphenyl ether and of 2 : 4-dibromo-phenyl *p*-toluenesulphonate and benzoate. The chlorination and bromination of m-nitrophenol," by Miss R. V. Henley and E. E. Turner.

The Dunston Low-Temperature Carbonisation Plant

A LARGE party of members of the Newcastle Section of the Society of Chemical Industry recently visited the distillation plant at Dunston Power Station of the Newcastle Electrical Supply Co. The distillation plant was designed by Babcock and Wilcox, and, under Mr. E. G. Weeks and his staff, is showing successful results in low temperature carbonisation and the production of by-products from Northumberland and other coals not usually associated with by-product production. The visitors were able to see in course of construction a new retort designed for an output of 60 tons. The new design is more simple but not fundamentally different from the 30-ton existing retorts.

Chemical Matters in Parliament

Indian Chemical Industry

MAJOR POLE asked the Secretary of State for India (House of Commons, January 27) whether he was aware that it was only after repeated representations had been made to the Government of India that the question of the protection of the Indian chemical industry was referred in 1928 to the Indian Tariff Board; if he was aware that, although the Report of the Tariff Board was presented some time ago and its publication was promised for November last, the recommendations of the Board had not yet been made public; and whether, in view of the anxiety caused by this delay, he would state the present position in this matter and would press upon the Government of India the desirability of the early publication of the findings of the Tariff Board on this question?

Mr. Benn replied that he was aware that the reference to the Tariff Board was made in consequence of representations from chemical manufacturers. The answer to the second part of the question was in the affirmative, except that he was not aware of publication having been promised for November. As regards the third part, he had no reason to suppose that the delay caused by the consideration of this exceedingly complicated question had been unduly prolonged.

Duty on Copper Sulphate

In reply to a question by Mr. Jenkins (House of Commons, January 27), Mr. Gillett stated that his attention had already been called to the increase of the duty levied on copper sulphate imported into Portugal, and that His Majesty's Ambassador at Lisbon had made representations on the matter to the Portuguese Government.

Dead Sea Salts Concessions

Mr. Arthur Henderson informed Colonel Howard-Bury (House of Commons, January 27), that he had had no further communications from the French Ambassador with regard to the Dead Sea concessions, and that no agreement had as yet been reached with the French Government. He was unable to make any statement as to whether the whole question was to be referred to the Hague.

Dr. Shiels, replying in the House of Commons on January 29 to Lieut.-Colonel Howard Bury, who asked whether the Dead Sea Concessions agreement had been signed and ratified, said the transaction had been completed. A deed was signed on January 1, he added, granting the concession to Palestine Potash, Ltd., a company formed by Mr. Novomeysky and Major Tulloch for this purpose. The concession was on the lines of the heads of agreement printed in a White Paper.

Treatment of Flour

Replying to a question by Mr. Day (House of Commons, January 24), Mr. Greenwood said that his attention had not recently been drawn to the cases of the treatment of flour by chlorine, and he did not propose to take any action at the present time.

Institute of Chemistry Pass List

THE Pass List of the Institute of Chemistry for the January examinations, 1930, is as follows:—

Examination in General Chemistry for the Associateship.—Abbott, W. J. (the Polytechnic, Regent Street, London); Brierley, F. (College of Technology, Manchester, and the Polytechnic, Regent Street, London); Brookhouse, F. (University College and the College of Technology, Leicester); Evans, C. L. (the Technical College, Birmingham); Field, W. T. (the Technical College, Birmingham); Kramrisch, B. (the Technical College, Bradford).

The Dust Problem at Billingham

ON Wednesday, the Urban Council at Billingham discussed complaints received from residents in regard to alleged nuisance caused by dust and grit from the I.C.I. works. The sanitary inspector reported that while there appeared to be no doubt about the efficiency, from a dust-removal point of view, of the plant installed for the purpose by the company, yet the difficulty was to keep it in operation for a reasonable period without choking. Experimental work was being carried out with the object of overcoming this trouble.

From Week to Week

LORD MELCHETT arrived in Capetown on Monday. His visit is arousing great interest in South Africa.

SIR MAX MUSPRATT and Dr. G. C. Clayton have been elected president and deputy-president respectively of the Widnes Chamber of Commerce.

PROFESSOR SAMUEL SMILES, F.R.S., who holds the Daniell Chair of Chemistry at King's College, London, has been appointed a Fellow of the College.

MR. J. DAVIDSON PRATT'S article on British Chemical Industry in the Annual Review Number of THE CHEMICAL AGE has been reprinted in the German journal, *Die Chemische Industrie*.

HUNSWORTH MILLS, Cleckheaton, a branch of the Bradford Dyers' Association, is to close down. This mill is the site of "Hollow's Mill," mentioned in Charlotte Brontë's novel, *Shirley*.

ERNEST BENN, LTD., have just published their spring list for 1930. Books to be published in the early months of this year include *The Manufacture of Gas*, by H. Hollings; *The Problem of Oil*, by C. T. Brunner, and numerous others.

A FOULERTON RESEARCH STUDENTSHIP has been awarded by the Royal Society to Dr. A. S. Parkes, who at present holds a Senior Beit Research Fellowship. Dr. Parkes is working in the department of Physiology and Biochemistry at University College, London.

THE SALE of the Schoonaerde naphthalene manufactured by the Union Chimique Belge Soc. An. has been transferred from the Ougrée Steel Trading Co., Ltd., to Chemicals and Coke Ovens, Ltd., Vintry House, Queen Street Place, London, E.C.4 (telephone, Central 2061).

THE INSTITUTION OF ELECTRICAL ENGINEERS have awarded the Faraday Medal to Sir Ernest Rutherford, P.R.S. The medal is given for conspicuous service rendered to the advancement of electrical science, without restriction as regards nationality or country of residence.

MR. GILBERT B. HOWARTH, M.C., M.Sc., A.I.C., has been appointed chief chemist to the Newcastle-upon-Tyne and Gateshead Gas Co., and will consequently resign his position as Senior Research Assistant on the staff of the Joint Research Committee of the Institution of Gas Engineers and the University of Leeds.

A SPECIAL COURSE of fourteen lectures on "High Pressure Gas Reactions" will be given at the Imperial College of Science on Friday afternoons at 4 p.m., commencing February 14, by Professor W. A. Bone, F.R.S., and Drs. D. M. Newitt and D. T. A. Townend. Details may be obtained from the Registrar, The Imperial College, South Kensington, London, S.W.7.

TORBANITE PRODUCTS, LTD., is reported to be making fairly satisfactory progress in the construction of its plant on the oil shale deposit in McLellan's Brook district, Pictou County, Nova Scotia. It is believed that the Province has 10,000,000,000 tons of shale capable of producing an average of a barrel of oil per ton. The company hopes that the gasoline recovered from the shale will be sufficient to defray the cost of operation and that the profits will be derived from the sale of by-products.

MR. JUSTICE JOHNSTON, in the High Court, Dublin, on Friday, January 24, reserved judgment in the matter of the estate of the late Julius Ostersetzer, chief analytical chemist in the employment of Goulding and Co., Ltd., of Dublin. The matter arose on the application of Mr. David Drimmie, Dublin executor of the will of the deceased, for the opinion of the Court as to whether a sum of £2,500 paid to the administrator of Austrian property formed part of the estate of the deceased for the purposes of legacy duty.

SINCERE SYMPATHY will be extended to Sir Max and Lady Muspratt on the death of their grandson and the heir to the baronetcy, Master Rudolph Muspratt, on Saturday, January 25, in Toronto. It will be remembered that Sir Max's only son, Mr. Rudolph Muspratt, died just twelve months ago after an operation for appendicitis. Two sons were born to his widow after his death, and in September last they left with their mother on a visit to her parents, Mr. and Mrs. Meurig Lloyd Davies of Toronto. The younger of the boys, Master Max Lloyd Muspratt, now becomes the sole heir to the title.

MR. C. F. HAMMOND, of Submerged Combustion, Ltd., will read a paper on "The application of submerged combustion to the dyeing, laundry, chemical and allied industries" before a joint meeting of the Nottingham Section of the Society of Chemical Industry and the Society of Dyers and Colourists, on Thursday, February 6, at 7.30 p.m., at University College, Nottingham. This paper will follow the annual meeting of the Nottingham Section of the S.C.I., which will take place at 7.10 p.m. Mr. Hammond's paper will deal with the fundamental difference in combustion conditions essential to produce an unquenchable flame; how these conditions have been embodied in a practical way; the scope of the system as applied to central heating and domestic hot water; application to dyeing and laundry operations, to the treatment of sludge in sewage disposal, to the thermal treatment or concentration of chemical solutions, to the heating of acid solutions for pickling processes and to the melting of non-ferrous metals.

FATAL INDUSTRIAL ACCIDENTS reported during December, 1929, included five in chemical works.

DISEASES OF OCCUPATIONS reported during December, 1929, included 25 cases of chrome ulceration.

RECENT WILLS INCLUDE:—Mr. John Thomas Fairs, of Grascendale, Liverpool, formerly with Imperial Chemical Industries, Ltd. (net personalty £1,393), £1,776.

THE INDIAN CUSTOMS TARIFF as in operation on January 1, 1930, is published in the *Board of Trade Journal* for January 23 as a supplement. The substances mentioned include chemicals, drugs, medicines, dyes and colours, etc.

DR. W. H. MILLS, F.R.S., of Cambridge, has been chosen by the Council of the Chemical Society as the recipient of the Longstaff Medal for 1930 in recognition of his researches in organic chemistry, especially in relation to stereochemistry.

GERMAN EXPORTS OF ANILINE DYES last year were 27,500 tons, against 30,600 in 1928. Indigo exports were 10,900 tons, against 12,000, while alizarines show 2,600 tons, against 2,200. Trade in anilines with Great Britain shows an increase.

MR. T. HEDLEY BARRY, consulting chemist, has transferred his practice from 1, Gough Square, London, to Buchanan Buildings, 24, Holborn, London, E.C.1, to which all communications should be addressed. The laboratory address is 84, Fetter Lane, London (telephone, Holborn 8522.)

THE DEPARTMENT OF MINERALOGY of the University of Cambridge was the subject of a discussion by the Senate of the University on Tuesday. It was proposed that the department should be replaced by two others—crystallography (with a separate chair) and mineralogy and petrology (with a separate chair).

DR. HARRISON E. HOWE, editor of *Industrial and Engineering Chemistry*, the journal of the American Chemical Society, is undertaking a six weeks' lecturing tour through the United States, under an arrangement with Mr. L. J. St. John, the State chemist and head of the Division of Chemistry, Agricultural Experiment Station, in the State College of Washington.

MR. WILLIAM FRASER has been appointed deputy-chairman of the Anglo-Persian Oil Co., Ltd., of which he is already a director. He is also managing director of the Broxburn Oil Co., Ltd., Dalmeny Oil Co., Ltd., Oakbank Oil Co., Ltd., Pumpherston Oil Co., Ltd., Scottish Oil Agency, Ltd., Scottish Oils, Ltd., and Young's Paraffin Light and Mineral Oil Co., Ltd., and a director of several other oil companies.

UNEMPLOYED INSURED PERSONS in the chemical industry in Great Britain at December 16, 1929, numbered 7,188 (males 6,377 females 811); in the explosives industry, 922 (males 701, females 221); in the paint, varnish, japan, red and white lead industries, 855 (males 675, females 180); and in the oil, grease, glue, soap ink, match, etc., industries, 4,708 (males 3,829, females 879). The percentages of insured persons unemployed in the above industries were 6·8, 4·5 and 6·3 respectively.

THE OFFICE of President of the Chemical Society (held by Professor J. F. Thorpe) falls vacant this year in the ordinary way, but the Council has decided that, owing to the exceptional circumstances arising from the scheme for the provision of a central building for the mining, metallurgical, and chemical institutions, a change of presidency at this stage would be undesirable. Professor Thorpe has agreed to be re-nominated on the condition that he may tender his resignation after another year of office. The annual meeting takes place on Thursday, March 27, and will be followed by the anniversary dinner in the evening.

SIR THOMAS LEGGE, formerly Senior Medical Inspector of Factories, has been appointed by the Trade Union Congress as advisor and consultant to the social insurance department on all matters affecting the health of workers arising out of their employment. His work will be primarily in connection with the prevention of industrial diseases and forms of poisoning. He will not undertake actual medical treatment, but he will be available for the examination of groups of workpeople employed in factories or workshops, with a view to advising as to whether they are suffering from any occupational disease. Sir Thomas, who will take up his duties on February 3, served as Senior Medical Inspector of Factories from 1898 to 1926, when he resigned owing to a difference with the Conservative Government on the White Lead Convention.

Obituary

PROFESSOR LUDWIG CLAISEN, of Kiel and Berlin, well-known for his researches on organic chemistry, on January 5, aged 78.

PROFESSOR HUGH LONGBOURNE CALLENDAR, F.R.S., professor of physics in the Imperial College of Science and Technology, on January 21, aged 66. He was best known for his work on the specific heat of water, but had also carried out numerous other researches.

SIR FRANK WARNER, on January 23, aged 67. The son of the founder of Warner and Sons, the famous firm of silk manufacturers, he was associated all his life with the silk industry. Among the offices which he held were those of president of the Silk Association of Great Britain (1910-17), chairman of the Silk Advisory Committee of the Imperial Institute (1917–27), and chairman of the British Silk Research Association (1920–27).

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The irreversible oxidation of organic compounds. IV.—The oxidation of aldehydes. J. B. Conant, J. G. Aston and C. O. Tongberg. *Journ. Amer. Chem. Soc.*, January, pp. 407–419.

Relative rates of reduction of aromatic nitro compounds. J. R. Sampey. *Journ. Amer. Chem. Soc.*, January, pp. 88–92. A table is given of the relative rates of reduction to amines of twenty-eight aromatic nitro compounds by an acid stannous chloride solution. An increase in the hydrogen-ion concentration of the stannous chloride solution increases the speed of the reduction. Water has an inhibitory effect upon the speed of the reduction.

PAINTS.—Drying of exterior paints under various weather conditions and over different woods. F. C. Schmutz and F. C. Palmer. *Ind. Eng. Chem.*, January 1, pp. 84–87. It is generally recognised that weather conditions during the drying period influence the rate of drying and the subsequent durability of a paint. Data are presented showing the influence upon the setting-up rate or drying time of such weather variables as light, humidity and temperature. The study also covers the influence on the drying time of the surface on which the paint is applied.

VITAMINS.—A study of the preparation and properties of vitamin C fractions from lemon juice. H. L. Sipple and C. G. King. *Journ. Amer. Chem. Soc.*, January, pp. 420–423.

A study of the antimony trichloride colour reaction for vitamin A. E. R. Norris and A. E. Church. *Journ. Biol. Chem.*, January, pp. 477–489.

German

ADSORPTION.—The adsorption of gas mixtures, containing air, alcohol and ether, by various silica gels.—II. L. von Putnoky and G. von Szelenyi. *Zeitschrift Elektrochemie*, January, pp. 10–15.

ANALYSIS.—The application of sodium thiosulphate in analytical chemistry. E. Donath. *Chemiker-Zeitung*, January 25, pp. 78–79.

APPARATUS.—A simple cryostat. E. Zintl and S. Neumayr. *Berichte*, January 8, pp. 234–236.

CELLULOSE.—The phenomena which occur on the dissolution of cellulose in ammoniacal copper oxide. K. Hess and C. Trogus. *Berichte*, January 8, pp. 401–450.

CRACKING.—Experiments on the cracking of mineral oil in the electric arc. G. Fester and C. Christen. *Zeitschrift Elektrochemie*, January, pp. 17–20.

DRYING.—The economics of hot air drying with regard to the highest permissible temperature of the goods to be dried. O. Vajda. *Chemische Fabrik*, January 22, pp. 25–27.

DYEING AND DYESTUFFS.—New fast shades with naphthol AS products for printing. A. Neuwirth. *Melliand Textilberichte*, January, pp. 33–37.

Vat dyes on wool. H. Gurlt. *Melliand Textilberichte*, January, pp. 40–42.

The chemistry of the hydrosulphite–glucose vat. H. Perndanner, J. Hackl and H. Bartl. *Melliand Textilberichte*, January, pp. 42–45.

GENERAL.—Impurities and some properties of technical mercury fulminate. L. Wöhler and A. Berthmann. *Zeitschrift angewandte Chem.*, January 18, pp. 59–63.

ORGANIC.—Aromatic hydrocarbons and their derivatives. VI.—The synthesis of 1 : 2 : 3 : 4-dibenzpyrene and its derivatives. E. Clar. *Berichte*, January 8, pp. 112–120.

The cracking of some organic compounds under a high pressure of hydrogen. W. Ipatien, N. Orlow and N. Lichatschew. *Berichte*, January 8, pp. 156–160.

PLANT.—High pressure compressors for service in ammonia synthesis. E. Blau. *Chemiker-Zeitung*, January 1, pp. 2–3; January 8, pp. 29–30; January 22, pp. 66–67.

TEXTILES.—The application and improvement of coco fibre (coir) in the textile industry. H. Brandenburger and Gutjahr. *Melliand Textilberichte*, January, pp. 50–51.

Miscellaneous

ANALYSIS.—The determination of available alkalinity in commercial lime. C. M. Jovellanos. *Philippine Journ. Science*, January, pp. 71–74 (in English).

Argentometric studies. III.—The determination of bromides and iodides in large excess of chlorides. O. Tomicek and A. Jansky. *Collection Czechoslovak Chem. Communications*, January pp. 1–7 (in English). A new analytical procedure for the determination of bromides has been worked out. This method is a combination of an improved and modified Winkler's method with the potentiometric titration of bromides in a solution containing sulphurous acid. The method gives satisfactory results uninfluenced by the presence of iodine and chlorine which escape into the distillate. A standard procedure for the argentometric determination of iodides, bromides and chlorides in mineral water salts is given, in which the halides are titrated potentiometrically.

GENERAL.—Some new derivatives of cyclohexanone including some new indicators. B. Samdahl. *Journal Pharmacie et Chimie*, January, pp. 8–19 (in French).

Water-white coconut oil and coconut flour. A. O. Cruz and A. P. West. *Philippine Journ. Science*, January, pp. 51–58 (in English).

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Accepted Specifications

322,167. CRACKING HYDROCARBONS. W. M. Cranston, 441, Salisbury House, London. Application date, August 24, 1928.

A mixture of equal parts of crude oil, and bituminous material containing more then 20 per cent. volatile substances, is heated at atmospheric pressure to 180° C. in a still having stirrers of nickel, and the low boiling constituents are distilled off and condensed. The temperature is raised to 320° C. and the pressure to 200 lb. per sq. in., and steam is admitted to the still to assist cracking. The final residue is a mixture of petroleum, pitch, and coke, which may be used as a fuel.

322,169. DYES. A. G. Dandridge, H. A. E. Drescher, J. Thomas and Scottish Dyes, Ltd., Earl's Road, Grangemouth, Scotland. Application date, May 16, 1928.

Phthalic anhydride, phthalimide, or the mono- or di-amide of phthalic acid is treated with ammonia or a primary monamine of the aliphatic, or benzene, or naphthalene series, in the presence of iron, nickel, or copper, or their compounds, to obtain vat dyes or pigments. The products may be treated with sulphuric acid or oleum to obtain dyestuffs dyeing animal fibres from acid baths. Either series of products is suitable for dyeing cellulose esters. Examples are given of the production of dyestuffs from phthalic anhydride, ammonia, and iron or cuprous chloride; phthalimide, ammonia, and nickel sulphide or cupric chloride; phthalic di-amide, ammonia, and ferrous sulphide; phthalimide, aniline, and nickel sulphide; phthalimide, methylamine, and ferrous sulphide; phthalimide, *p*-toluidine, and nickel sulphide; phthalimide, B-naphthalamine, and nickel sulphide. These products may be sulphonated, and the dyeing of wool is described.

322,179. INSECTICIDES AND FERTILISERS. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, August 27, 1928.

Cyanides which are readily decomposed by moisture, or ammoniates of such cyanides are mixed with organic liquids and compounds which can be liquefied by heating, for use as insecticides. Hygroscopic salts such as calcium nitrate or magnesium chloride, wetting agents, and other insecticides may be added. Calcium or magnesium cyanide, or calcium cyanide di-ammoniate are mentioned as suitable compounds. In the latter case, ammonia is liberated by the action of moisture, and acts as a fertiliser. Organic liquids employed include naphthalene, mineral oils, petroleum or tar oil fractions, ethylene chloride, tri-chlorethylene, carbon tetrachloride, *p*-dichloro-benzene, or other dichloro benzenes, halogenated naphthalenes, or cyclic nitrogenous bases such as pyridine. Wetting agents which may be added include butyl-naphthalene, sodium sulphonate, or other water-soluble salts of alkyl naphthalene sulphonic acids or other sulphonated aromatic compounds or sulphonated fatty acids; or hydroxy-alkylamines such as tri-ethanol-amine or mixtures of mono-, di-, and tri-ethanol-amine.

322,184. DYES AND INTERMEDIATES. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, July 23, 1928.

The imide chlorides of 2:6-diaroyl-diamino-anthraquinones are treated with sulphur to obtain C-diaryl-2:1-(S):6:5 (S)-anthraquinone-dithiazoles. If the reaction is effected at low temperature the first products are 2:6-bis-arylmercapto-methylimino-anthraquinones, which may be converted into the dithiazoles by treating with acid or alkaline dehydrogenating agents such as sulphuric acid or chlorsulphonic acid, which may be mixed with an oxidising agent, or potassium hydroxide solution containing potassium ferrocyanide. Some examples of these reactions are given.

322,193. INSECTICIDES, DISINFECTANTS, ETC. A Carpmael, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, August 29, 1928.

The residue from the distillation of products resulting from the synthesis of alcohols as described in Specifications Nos. 238,319 and 254,819 (See THE CHEMICAL AGE, Vol. XIII, p. 306 and Vol. XV, p. 163) is rendered water-soluble for use as an insecticide, fungicide, bactericide, and animal medicine. Thus, an isobutyl alcohol residue from methanol synthesis obtained by distillation of higher boiling components at 150°—300° C., and containing isobutylalcohol, ketones, fatty acids, lactones, and phenol, is mixed with a solution of a wetting agent such as highly sulphonated oil, soap, or an aromatic alkyl hydrocarbon sulphonic acid.

322,209. DYES. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, August 27, 1928.

The sulphonic acid derivatives of 1:2-naphtho-phenazine and 1:2:1¹:2¹-di-naphthazine are heated under pressure with caustic alkali solutions containing up to 10 per cent. of caustic alkali, to obtain the corresponding hydroxy derivatives. This reaction and the production of the starting materials may be effected in one operation. Examples are given of the treatment of the sodium salts of 1:2:1¹:2¹:dinaphthazine-8:8¹- and 5:5¹-disulphonic acids, and of 1:2-naphthophenazine-6-sulphonic acid to obtain the corresponding hydroxy derivatives. The sodium salt of 2-naphthylamine-8-sulphonic acid may first be heated with a solution of sodium hydroxide and hypochlorite and the resulting dinaphthazine heated under pressure to obtain 8:8¹-dihydroxy-1:2-1¹:2¹-dinaphthazine.

322,253. BENZANTHRONE DERIVATIVES. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, September 7, 1928.

The condensation products made as described in specification 319,593 (See THE CHEMICAL AGE, Vol. XXI, p. 407) from benzanthrones having free 2-positions and ketones of the general formula $R^1.CO.CH_2.R$ where R is a hydrocarbon radicle, which may be substituted, and R is hydrogen or an alkyl group, are treated with alkaline saponifying agents, *e.g.*, aqueous or alcoholic caustic alkalies, calcium and barium hydroxides. The condensation and saponification may be effected in one operation. Thus, 2-acetonyl-benzanthrone may be saponified to obtain 2-methyl-benzanthrone by boiling with aqueous caustic soda or anhydrous sodium sulphide, and the condensation product from benzanthrone and acetophenone may be boiled with alcoholic potash to obtain 2-methyl-benzanthrone. This compound may also be obtained directly by introducing acetone in an atmosphere of nitrogen into a mixture of benzanthrone, caustic potash, and monochlorbenzene, diluting with alcohol, and boiling. Another example is given of the production of 2-*n*-propyl-benzanthrone.

322,277 and 322,281. DYES. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, October 5 and 10, 1928.

322,277. 1:2:2¹:1¹-Anthraquinone-azine is treated with hydrohalic acids or their salts in sulphuric acid of 50-80 per cent. strength, to obtain halogenated derivatives. The manufacture of the pure azine as described in specification 320,397 (See THE CHEMICAL AGE, Vol. XXI, p. 552) may be combined with the halogenation in one operation. Examples are given of the treatment of the ordinary 1:2:2¹:1¹-anthraquinoneazine, Indanthrene blue R.S., and pure N-dihydro-1:2:2¹:1¹-anthraquinoneazine obtained as described in specification 184,193 (See THE CHEMICAL AGE, Vol. VII, p. 538).

322,281. Condensation products of N-dihydro-1:2:2¹:1¹-anthraquinoneazines with formaldehyde are oxidised with acid or alkaline oxidising agents into dyestuffs which dye more greenish shades. Alternatively, the starting material may be heated with alkaline agents alone and the leuco compound obtained then oxidised. Examples are given in which the condensation product of N-dihydro-1:2:2¹:1¹-anthraquinone-azine and paraformaldehyde is oxidised in sulphuric acid solution with potassium dichromate, the condensation product of N-dihydro-1:2:2¹:1¹-anthraquinoneazine and formaldehyde is heated with ground caustic potash and the product air-

oxidised, and a suspension of N-dihydro-1:2:2¹:1¹-anthraquinoneazine in sulphuric acid is treated with paraformaldehyde and the product treated with manganese dioxide.

322,284. HYDROCARBONS. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. Application date, October 11, 1928.

Gaseous mixtures of oxides of carbon and hydrogen are treated at increased pressure and temperature with catalysts consisting of metals of the eighth group, alkali metal compounds and small quantities of free or combined sulphur, selenium or tellurium. Liquid products of olefinic character are obtained and may be employed in liquid fuels to prevent knocking, for the manufacture of lubricating and insulating oils by condensation by means of aluminium chloride, boron fluoride, etc., for catalytic production of benzene hydrocarbons, and for manufacture of alcohols, glycols, etc. To obtain the catalysts, alkali sulphide or hydrosulphide is added to the metal hydroxide obtained by precipitation with ammonia. Alternatively, the catalyst can be obtained by precipitating—*e.g.*, iron nitrate with ammonia and sulphuretted hydrogen, drying the precipitate, and adding the necessary amount of alkali metal hydroxide or carbonate. One or more of the metals of the eighth group may be used, and other substances may be added, such as copper, silver, gold or cadmium, and alkali metal chlorides. Low temperatures and high pressures tend to form high molecular by-products such as paraffins and waxes. In an example, iron and cobalt hydroxides precipitated by means of ammonia are impregnated with potassium sulphide solution, and reduced with hydrogen. With this catalyst, employing ordinary pressure and a temperature of 267° C., liquid hydrocarbons, 10 per cent. of which boil above 180° C., are obtained.

NOTE.—Abstracts of the following specifications, which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention :—293,302 (M. Polanyi and S. von Bogdandy), relating to the synthesis of chemical substances, see Vol. XIX, p. 219 ; 293,690 (Naamlooze Vennootschap Chemische Fabriek Servo and M. D. Rozenbrock), relating to sulphonating fatty acids and fatty acid derivatives, see Vol. XIX, p. 243 ; 297,362 (I.G. Farbenindustrie Akt.-Ges.), relating to azo dyestuffs, see Vol. XIX, p. 497 ; 303,176 (Compagnie de Bethune), relating to ethyl alcohol and other products from coal distillation gases, see Vol. XX, p. 214 ; 311,225 (Metallges. Akt.-Ges.), relating to metallic oxides for use as pigments, see Vol. XXI, p. 34.

Specifications Accepted with Date of Application

298,639. Sodium sulphate. Separation of—from sulphuric acid. Vereinigte Glanzstoff-Fabriken Akt.-Ges. October 13, 1927.

298,640. Dinaphthylene dioxide quinone, Manufacture of. I.G. Farbenindustrie Akt.-Ges. October 13, 1927.

300,549. Acid dyestuffs of the pheno-naphthosafranine series, Manufacture of. J. R. Geigy Akt.-Ges. November 14, 1927. Addition to 265,986, 284,614, 284,615, 285,486 and 297,441.

301,864 and 309,023. Leaching raw phosphate. Kunstdunger-Patent-Verwertungs Akt.-Ges. December 7, 1927, and April 3, 1928. 309,023, addition to 301,864.

302,251. Azo dyestuffs. I.G. Farbenindustrie Akt.-Ges. December 12, 1927.

303,482. Cleansing of alkali dyes. R. Winternitz. January 4, 1928.

308,980. Isatins, Manufacture of. I.G. Farbenindustrie Akt.-Ges. March 29, 1928.

312,046. Concentrated acetic acid, Manufacture of. Soc. Anon. des Distilleries des Deux-Sêvres. May 19, 1928.

309,071. Cadmium plating. C. H. Humphries. April 4, 1928.

309,476. Roasting zinc blende. Balz-erzrostung Ges. April 11, 1928. Addition to 303,055.

323,720. Emulsions, Manufacture of. Imperial Chemical Industries, Ltd., A. J. Hailwood, A. Shepherdson and A. Stewart. October 2, 1928.

323,721. Artificial rubber, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) October 3, 1928.

323,740. Dehydrating, Method of and apparatus for. G. A. Sykes, October 8, 1928.

323,755. Organic materials, Manufacture of. Dunlop Rubber Co., Ltd., E. A. Murphy and A. Niven. October 6, 1928.

323,781. Water-soluble products from lignite and similar fossil materials. I.G. Farbenindustrie Akt.-Ges. October 10, 1928. Addition to 284,670.

323,801. Stable highly-chlorinated train oils, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) October 10, 1928.

323,802. Cupric cyanic and cupric thiocyanic compounds, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges*). October 10, 1928.

323,800. Derivatives of dinaphthylene dioxide, Manufacture of. A. Carpmael. (*I.G. Farbenindustrie Akt.-Ges.*) October 11, 1928.

323,845. Corrosion-resistant ferrous alloy. J. T. Hay. October 30, 1928.

323,855. Catalytic decomposition of hydrocarbons. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) November 8, 1928.

323,864. Decomposition of hydrocarbon gases or vapours in the presence of steam to obtain a mixture of hydrogen and carbon monoxide. D. Tyrer and Imperial Chemical Industries, Ltd. November 16, 1928.

323,869. Cellulose butyric esters. Manufacture of. G. B. Ellis. (*Soc. des Usines Chimiques Rhône Poulenc.*) November 20, 1928.

323,908. Sulphur from solutions of alkali metal polysulphides, Recovery of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) December 31, 1928.

323,919. Pure sulphur, Production of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) January 7, 1929.

323,937. Azo dyestuffs insoluble in water. O. Y. Imray. (*I.G. Farbenindustrie Akt.-Ges.*) January 23, 1929.

323,948. Nitriles, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) February 11, 1929.

323,973. Compounds of *k*-strophanthidin, Manufacture of. A. Carpmael. (*Schering-Kahlbaum Akt.-Ges.*) March 19, 1929.

323,985. Water-soluble fertilisers, Manufacture of. J. Y. Johnson. (*I.G. Farbenindustrie Akt.-Ges.*) April 8, 1929.

Applications for Patents

[*In the case of applications for patents under the International Convention, the priority date (that is, the original application date abroad which the applicant desires shall be accorded to the patent) is given in brackets, with the name of the country of origin. Specifications of such applications are open to inspection at the Patent Office on the anniversary of the date given in brackets, whether or not they have been accepted.*]

Adam, W. G., Murdoch, D. G., and Gas Light and Coke Co. Production of sulphate of ammonia. 1,924. January 20. (March 20, 1929.)

Allen, A. G. Purification of trinitrotoluene. 2,095. January 21.

Baxter, J. P., and Imperial Chemical Industries, Ltd. Production of carbon and hydrogen chloride. 2,342. January 23.

Bunbury, H. M., and Imperial Chemical Industries, Ltd. Manufacture of intermediate compounds from unsaturated hydrocarbons. 2,229. January 22.

Carpmael, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of azo dyestuffs. 2,013. January 20.

—— Manufacture of chlorine compounds. 2,265. January 22.

—— Manufacture of amino-aryl-thiazole compounds. 2,266. January 22.

Chemische Fabrik Bork Ges. Working up waste sulphuric acid. 2,448. January 23.

Chew, C., Refiners, Ltd., and Scott, T. Purification of aromatic naphthas, and production of resins therefrom. 2,065. January 21.

Courtaulds, Ltd., and Hegan, H. J. Recovery of caustic soda. 2,663. January 25.

Cross, E. J., and Perkin, A. G. Manufacture of hydroxylated anthrones. 2,519. January 24.

Deutsche Gold-und Silber-Scheideanstalt Vorm. Roessler. Preparing acetylides. 2,383. January 23. (Germany, February 7, 1929.)

Duplan, F. P. E. S. Transforming hydrocarbons having high-boiling point into volatile hydrocarbons. 1,988. January 20. (Germany, January 21, 1929.)

Du Pont de Nemours and Co., E. I., and Imperial Chemical Industries, Ltd. Manufacture of helerocyclic alcohols. 2,614. January 25.

Gas Light and Coke Co., and Griffith, R. H. Conversion of high-boiling point into lower boiling point hydrocarbons. 2,649. January 25.

—— Dehydrogenation, polymerization, etc., of hydrocarbons. 2,650. January 25.

Hardie and Co., Ltd., H. D. Manufacture of mono-sodium glutamate, etc. 2,368. January 23.

Heilbron, I. M., Imperial Chemical Industries, Ltd., and Irving, F. Manufacture of dyestuffs from heterocyclic compounds. 2,074. January 21.

Holzverkohlungs-Industrie Akt.-Ges. Production of ketones. 2,252. January 22. (Germany, January 29, 1929.)

Hurtley, W. R. H., Imperial Chemical Industries, Ltd., and Wheeler, T. S. Production of lactic acid esters. 2,623. January 25.

I.G. Farbenindustrie Akt.-Ges and Johnson, J. Y. Treatment of gases containing hydrogen. 1,976. January 20. (November 26, 1928.)

—— Improving animal fibres. 1,977. January 20.

I.G. Farbenindustrie Akt.-Ges. and Imray, O. Y. Manufacture of crayons. 2,002. January 20. (September 8, 1928.)

I.G. Farbenindustrie Akt.-Ges. and Imray O. Y. Production of products resembling wax. 2,198. January 22. (September 24, 1928.)
—— Improving lead. 2,278. January 22.
I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of aromatic hydroxyl compounds. 2,408. January 23.
—— Manufacture of metal mirrors. 2,409. January 23.
—— Purification of mineral oils, tars, etc. 2,410. January 23.
—— Manufacture of hydrocarbons rich in hydrogen. 2,411. January 23.
—— Manufacture of 1.2.diamino-anthraquinone, etc. 2,548. January 24.
I.G. Farbenindustrie Akt.-Ges. Electrolytic production of magnesium. 1,907. January 20. (Germany, February 6, 1929.)
—— Manufacture of vat dyestuffs. 1,946. January 20.
—— Dyeing viscose silk. 2,014. January 20.
—— Manufacture of materials by electrical discharges. 2,015. January 20. (Germany, January 18, 1929.)
—— Manufacture of substitution products of carbazole sulphonic acids. 2,399. January 23. (Germany, January 23, 1929.)
—— Manufacture of artificial articles of dull lustre. 2,550. January 24. (Germany, January 24, 1929.)
—— Manufacture of halogen-containing vat dyestuffs. 2,662. January 25. (Germany, April 27, 1929.)
Imperial Chemical Industries, Ltd. Manufacture of dyestuffs from heterocyclic compounds. 2,074. January 21.
—— Manufacture of intermediate compounds from unsaturated hydrocarbons. 2,229. January 22.
—— Production of carbon and hydrogen chloride. 2,342. January 23.
—— Coating-compositions, etc. 2,419. January 23. (United States, January 23, 1929.)
—— Manufacture of hydroxylated anthrones. 2,519. January 24.
—— Recovering sulphur from gases. 2,624. January 25.
—— Production of non-solvent propellant powders. 2,679. January 25.
Kane, T. Manufacture of alkyl chlorides from olefines, etc. 1,861. January 20.
Kunstdünger-Patent-Ventwertungs-Akt.-Ges. Treating solutions obtained in leaching phosphate rock with nitric acid and ammonium sulphate. 2,106. January 21. (Sweden, November 28, 1929.)
Kunstharzfabrik, Dr. F. Pollak Ges. Manufacture of condensation products. 2,572. January 24. (Austria, December 21, 1929.)
Maclaurin, R. Recovering acid ammonium carbonate from ammonia liquors. 2,460. January 24.
Margoles, J. Manufacture of potassium nitrate. 2,401. January 23.
Maxted, E. B. Oxidation of sulphur dioxide. 2,503. January 24.
Naamlooze Vennootschap Chemische Fabriek Servo and Rogenbrock, M. D. Sulphonating higher fatty acids, etc. 2,127. January 21. (Holland, January 22, 1929.)
Nitro-Sel. Manufacture of potassium nitrate. 2,401. January 23.
Standard Oil Development Co. Obtaining valuable distillates from carbonaceous materials. 2,085. January 21. (United States, January 22, 1929.)
Stirrat, A. C. Manufacture of mono-sodium glutamate, etc. 2,368. January 23.
Strange, E. H. Manufacture of alkyl chlorides from olefines, etc. 1,861. January 20.
Wreschner, A., Wreschner, L., and Wreschner Offene Handel-Ges., A. Production of zinc sulphide pigments. 1,952. January 20. (Germany, January 25, 1929.)

Dyemaker's Affairs

Mr. W. E. Greenwood, assistant Official Receiver, presided at Bolton Bankruptcy Court, on Friday, January 24, at a meeting of the creditors of Leeming Downham, trading as the Crescent Chemical Co., of Redisher Farm, Holcombe, and lately carrying on business at Waterfold Mills, Heap Bridge, as advisory chemist. The statement of affairs showed the following: Liabilities, £285 6s. 9d.; amount expected to rank for dividend, £235 2s. 3d.; assets, nil; deficiency, £235 2s. 3d. The cause of failure, as stated by debtor, was "insufficient capital for the business I made preparations to establish."

The Official Receiver (Mr. J. D. Turner) stated in his observations that the petition was filed by debtor on December 17. Debtor was a single man living at home with his parents. In February, 1929, after working for ten years for a firm of bleachers and dyers, he took over the tenancy of Waterfold Mills, Heap Bridge, at a rental of £150 a year, with a view to establishing a business under the style of the Crescent Chemical Co., for producing khaki dye.

As there was an insufficient number of creditors present to form a quorum no resolution was passed, and the matter was left in the hands of the Official Receiver. The public examination is fixed for February 11.

Action Against Artificial Silk Co.

Chemist Awarded £4,500 Damages

In the King's Bench Division, on Friday, January 24, Mr. Justice Rowlatt gave judgment for £4,500, with costs, in favour of Mr. Emile Van Wevenbergh, a chemist of Firborough Road, Stowmarket, who sued the British Acetate Silk Corporation, Ltd., of London Wall, E.C., alleging that they had wrongfully dismissed him from his position as viscose works manager of works at Stowmarket.

The plaintiff, who was formerly employed in Courtaulds' works at Calais, came to the defendants in May, 1928, at a salary of £1,500 a year, with a proviso that the salary would be increased to £2,000 when the works were in full operation. He was paid £1,000 in respect of the loss of his pension from Courtaulds, and was to have received another £1,000 under that head. He remained until December, 1928, when he was summarily dismissed.

The Defence

By their defence, the defendants pleaded that the plaintiff was incompetent and disobeyed precise instructions not to make any alterations in the artificial silk process at the works.

Plaintiff's case was that under his agreement he was to have a free hand in getting the works properly functioning, and the alterations he made were necessary and a part of his duty.

His lordship found that plaintiff was a thoroughly competent man for the post. In May there was an instruction not to make process alterations, but that became a dead letter. In December there was a precise instruction to the same effect, and his lordship thought that the plaintiff committed a breach of that a few days later. But the breach was not of such a serious character as to justify the defendants' action in dismissing plaintiff. A reprimand would have been sufficient. In the circumstances, the plaintiff was entitled to recover, and judgment was entered as stated, with costs. A stay of execution was granted pending notice of appeal.

Contented Billingham Chemical Workers

Expected I.C.I. Advance of Wages

It was announced at a trade union meeting at West Hartlepool last week that Imperial Chemical Industries might be shortly transferring some of their other works in the south to Billingham-on-Tees.

Mr. Will Thorne, M.P., in the course of the proceedings, paid a high tribute to the work done in the factories by the trades councils associated with Imperial Chemical Industries. An early application, he said, for an increase of 2d. per hour in the pay of chemical workers was going to be lodged, and it was anticipated that one penny an hour would be granted. It was a policy of Lord Melchett and his fellow directors to encourage all their employees to be trade unionists, for in a concern of such magnitude it was impossible to deal fairly with individuals unless they were represented by a trade union.

At the conclusion of the meeting a member of the audience declared that, as an employee of the Synthetic Ammonia works, he could truthfully state that, generally, the workers there were very content and very well satisfied with the conditions of employment, and were greatly impressed with the enterprise of the firm in establishing themselves on Tees-side at a time when the industrial situation was deplorable. The speaker's remarks met with general applause.

Prevention of Mildew on Cotton

A new antiseptic for use in cotton weaving which may have far-reaching effects on present methods of making fine quality cloths has been discovered by the Cotton Research Association, after lengthy research, in which over 150 substances have been examined. Hitherto, zinc chloride has been used on certain cloths to prevent mildew, but the new substance, it is claimed, can be used on many more sorts of cloth. The discovery will mean increased production in fine-grade cloths, as the fear of mildew has been banished. The problem presented was acute, as in addition to being non-poisonous to operatives, the new substance was required to be such as would have no effect on metals, and also to be odourless, colourless, and cheap.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.
ACID, CHROMIC.—1s. 0⅝d. per lb.
ACID HYDROCHLORIC.—Spot, 3s. 9d. to 6s. per carboy d/d, according to purity, strength and locality.
ACID NITRIC, 80° Tw.—Spot £20 to £25 per ton, makers' works according to district and quality.
ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
AMMONIA (ANHYDROUS).—Spot, 10d. per lb., d/d in cylinders.
AMMONIUM BICHROMATE.—8¼d. per lb.
BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.
BLEACHING POWDER, 35%.—Spot, £7 10s. per ton d/d station in casks, special terms for contracts.
BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £12 10s. per ton; powder, £14 per ton. (Packed in 1 cwt. bags carriage paid any station in Great Britain.)
CALCIUM CHLORIDE (SOLID).—Spot, £4 15s. to £5 5s. per ton d/d in drums.
CHROMIUM OXIDE.—10d. and 10½d. per lb. according to quantity.
COPPER SULPHATE.—£25 to £25 10s. per ton.
METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 3d. to 1s. 8d. per gall. pyridinised industrial, 1s. 5d. to 1s. 10d. per gall.; mineralised 2s. 4d. to 2s. 8d. per gall.; 64 O.P., 1d. extra in all cases.
NICKEL SULPHATE.—£38 per ton d/d.
NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
POTASH CAUSTIC.—£30 to £33 per ton.
POTASSIUM BICHROMATE CRYSTALS.—4⅜d. per lb. nett d/d U.K. spot; ground ½d. per lb. extra.
POTASSIUM CHLORATE.—3⅞d. per lb., ex-wharf, London, in cwt. kegs.
POTASSIUM CHROMATE.—8¼d. per lb.
SALAMMONIAC.—Firsts lump, spot, £42 10s. per ton d/d station in barrels. Chloride of ammonia, £37 to £45 per ton, carr. paid.
SALT CAKE, UNGROUND.—Spot, £3 7s. 6d. per ton d/d station in bulk.
SODA ASH, 58° E.—Spot, £6 per ton, f.o.r. in bags, special terms for contracts.
SODA CAUSTIC, SOLID, 76/77%.—Spot, £14 10s. per ton, d/d station in drums.
SODA CRYSTALS.—Spot, £5 to £5 5s. per ton, d/d station or ex depot in 2 cwt. bags.
SODIUM ACETATE 97/98%.—£21 per ton.
SODIUM BICARBONATE, REFINED.—Spot, £10 10s. per ton d/d station in bags.
SODIUM BICHROMATE CRYSTALS, CAKE AND POWDER.—3⅜d. per lb. nett d/d U.K. spot. Anhydrous ¾d. per lb. extra.
SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.
SODIUM CHLORATE.—2¾d. per lb.
SODIUM CHROMATE.—3½d. per lb.
SODIUM NITRITE.—Spot, £19 per ton, d/d station in drums.
SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.
SODIUM SILICATE, 140° Tw.—Spot, £8 5s. per ton, d/d station returnable drums.
SODIUM SULPHATE (GLAUBER SALTS).—Spot, £4 2s. 6d. per ton, d/d address in bags.
SODIUM SULPHIDE CONC. SOLID.—Spot, £10 5s. per ton d/d in drums. Crystals—Spot, £7 10s. per ton d/d in sellers' casks.
SODIUM SULPHITE, PEA CRYSTALS.—Spot, £13 10s. per ton, d/d station in kegs. Commercial—Spot, £9 per ton, d/d station in bags.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—7d. to 8½d. per lb. Crude 60's, 2s. 4d. to 2s. 6d. per gall.
ACID CRESYLIC 99/100.—2s. 2d. to 2s. 7d. per gall. Pure, 5s. to 5s. 2d. per gall. 97/99.—2s. 1d. to 2s. 2d. per gall. Pale, 95%, 1s. 9d. to 1s. 10d. per gall. 98%, 2s. 2d. to 2s. 3d. Dark, 1s. 6d. to 2s. Refined, 2s. 7d. to 2s. 10d. per gall.
ANTHRACENE.—A quality, 2d. to 2½d. per unit. 40%, £4 10s. per ton.
ANTHRACENE OIL, STRAINED, 1080/1090.—4¾d. to 5½d. per gall. 1100, 5½d. to 6d. per gall.; 1110, 6d. to 6½d. per gall. Unstrained (Prices only nominal).
BENZOLE.—Prices at works: Crude, 10d. to 11d. per gall.; Standard Motor, 1s. 5d. to 1s. 6d. per gall.; 90%, 1s. 7d. to 1s. 8d. per gall.; Pure, 1s. 10d. to 1s. 11d. per gall.
TOLUOLE.—90%, 1s. 9d. to 2s. 1d. per gall. Firm. Pure, 1s. 11d. to 2s. 5d. per gall.
XYLOL.—1s. 5d. to 1s. 10d. per gall. Pure, 1s. 8d. to 2s. 1d. per gall.
CREOSOTE.—Cresylic, 20/24%, 6¾d. to 7d. per gall.; Heavy, 6¼d. to 6⅜d. per gall. Middle oil, 4½d. to 5d. per gall. Standard specification, 3d. to 4d. per gall. Light gravity, 1¼d. to 1⅜d. per gall. ex works. Salty, 7½d. per gall.
NAPHTHA.—Crude, 8¼d. to 8¾d. per gall. Solvent, 90/160, 1s. 3d. to 1s. 3½d. per gall. Solvent, 95/160, 1s. 4d. to 1s. 6d. per gall. Solvent 90/190, 1s. to 1s. 3d. per gall.
NAPHTHALENE, CRUDE.—Drained Creosote Salts, £4 10s. to £5 per ton. Whizzed, £5 per ton. Hot pressed, £8 10s. per ton.
NAPHTHALENE.—Crystals, £12 5s. per ton. Purified Crystals, £14 10s. per ton. Quiet. Flaked, £14 to £15 per ton, according to districts.
PITCH.—Medium soft, 46s. to 47s. 6d. per ton, f.o.b., according to district. Nominal.
PYRIDINE.—90/140, 3s. 9d. to 4s. per gall. 90/160, 3s. 6d. to 3s. 9d. per gall. 90/180, 1s. 9d. to 2s. 3d. per gall. Heavy prices only nominal.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
ACID ANTHRANILIC.—6s. per lb. 100%.
ACID BENZOIC.—1s. 8½d. per lb.
ACID GAMMA.—4s. 6d. per lb.
ACID H.—3s. per lb.
ACID NAPHTHIONIC.—1s. 6d. per lb.
ACID NEVILLE AND WINTHER.—4s. 9d. per lb.
ACID SULPHANILIC.—8½d. per lb.
ANILINE OIL.—8d. per lb. naked at works.
ANILINE SALTS.—8d. per lb. naked at works.
BENZALDEHYDE.—2s. 3d. per lb.
BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.
BENZOIC ACID.—1s. 8½d. per lb.
o-CRESOL 29/31° C.—£3 1s. 10d. per cwt., in 1 ton lots.
m-CRESOL 98/100%.—2s. 9d. per lb., in ton lots d/d.
p-CRESOL 32/34° C.—2s. per lb., in ton lots d/d.
DICHLORANILINE.—1s. 10d. per lb.
DIMETHYLANILINE.—1s. 11d. per lb.
DINITROBENZENE.—8d. per lb. naked at works. £75 per ton.
DINITROCHLORBENZENE.—£84 per ton d/d.
DINITROTOLUENE.—48/50° C. 7½d. per lb. naked at works. 66/68° C 9d. per lb. naked at works.
DIPHENYLAMINE.—2s. 10d. per lb. d/d.
a-NAPHTHOL.—2s. per lb. d/d.
B-NAPHTHOL.—10d. per lb. d/d.
a-NAPHTHYLAMINE.—1s. 3d. per lb.
B-NAPHTHYLAMINE.—3s. per lb.
o-NITRANILINE.—5s. 9d. per lb.
m-NITRANILINE.—3s. per lb. d/d.
p-NITRANILINE.—1s. 8d. per lb.
NITROBENZENE.—6d. per lb. naked at works.
NITRONAPHTHALENE.—1s. 3d. per lb.
R. SALT.—2s. 2d. per lb.
SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.
o-TOLUIDINE.—8d. per lb.
p-TOLUIDINE.—1s. 9d. per lb. naked at works.
m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.
N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 15s. to £10 5s. per ton. Grey, £16 10s. to £17 10s. per ton. Liquor, 9d. per gall.
ACETONE.—£78 per ton.
CHARCOAL.—£6 to £8 10s. per ton, according to grade and locality.
IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.
WOOD CRESOTE.—1s. 9d. per gall. Unrefined.
WOOD NAPHTHA, MISCIBLE.—3s. 8d. to 3s. 11d. per gall. Solvent, 4s. to 4s. 3d. per gall.
WOOD TAR.—£3 10s. to £4 10s. per ton.
BROWN SUGAR OF LEAD.—£38 per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 3d. per lb. according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.
ARSENIC SULPHIDE, YELLOW.—1s. 10d. to 2s. per lb.
BARYTES.—£5 10s. to £7 per ton, according to quality.
CADMIUM SULPHIDE.—5s. to 6s. per lb.
CARBON BISULPHIDE.—£25 to £27 10s. per ton, according to quantity.
CARBON BLACK.—4½d. per lb., ex wharf.
CARBON TETRACHLORIDE.—£40 to £50 per ton, according to quantity, drums extra.
CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.
DIPHENYLGUANIDINE.—3s. 9d. per lb.
LITHOPONE, 30%.—£20 to £22 per ton.
SULPHUR.—£10 to £13 per ton, according to quality.
SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.
SULPHUR PRECIP. B.P.—£55 to £60 per ton.
ZINC SULPHIDE.—8d. to 11d. per lb.

• Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£37 per ton, ex wharf London, barrels free.

ACID, ACETYL SALICYLIC.—2s. 9d. to 2s. 10½d. per lb., according to quantity.

ACID, BENZOIC B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. 6d. per oz.; 50-oz. lots, 1s. 3d. per oz.

ACID, BORIC B.P.—Crystal, £32 per ton; powder, £36 per ton; extra fine powder, £38 per ton. Packed in 2-cwt. bags carriage paid any station in Great Britain.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 10½d. to 1s. 11d. per lb., less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, MOLYBDIC.—5s. 3d. per lb. in ½ cwt. lots. Packages extra. Special prices for quantities and contracts.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d.

ACID, SALICYLIC, B.P. PULV.—1s. 5d. to 1s. 6d. per lb. Technical.—1s. to 1s. 2d. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—1s. 3¾d. per lb., less 5%.

ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.

AMIDOL.—7s. 6d. to 9s. per lb., d/d.

AMIDOPYRIN.—7s. 9d. to 8s. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 9d. per lb., according to quantity. 18s. per lb. ex Gum.

AMMONIUM CARBONATE B.P.—£36 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated, 1s. per lb.

AMMONIUM MOLYBDATE.—4s. 9d. per lb. in ½ cwt. lots. Packages extra. Special prices for quantities and contracts.

ATROPHINE SULPHATE.—9s. per oz.

BARBITONE.—5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—3s. to 3s. 3d. per lb .spot.

BISMUTH CARBONATE.—8s. 9d. per lb.

BISMUTH CITRATE.—8s. 3d. per lb.

BISMUTH SALICYLATE.—8s 3d. per lb.

BISMUTH SUBNITRATE.—7s. 6d. per lb.

BISMUTH NITRATE.—Cryst. 5s. 3d. per lb.

BISMUTH OXIDE.—11s. 3d. per lb.

BISMUTH SUBCHLORIDE.—10s. 3d. per lb.

BISMUTH SUBGALLATE.—7s. 3d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.

BISMUTHI ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W. Qts. 11d. per lb.

BORAX B.P.—Crystal, £21 per ton; powder, £22 per ton; powder, ex. fine, £23 per ton. Packed in 1-or 2-cwt. bags carriage paid any station in Great Britain.

BROMIDES.—Ammonium, 1s. 10½d. per lb.; potassium, 1s. 6d. per lb.; granular, 1s. 5½d. per lb.; sodium, 1s. 9½d. per lb. Prices for 1 cwt. lots.

CALCIUM LACTATE.—B.P., 1s. 1¾d. to 1s. 3d. per lb., in 1-cwt. lots.

CAMPHOR.—Refined flowers, 3s. 3d. to 3s. 4d. per lb., according to quantity; also special contract prices.

CHLORAL HYDRATE.—3s. 1d. to 3s. 4d. per lb.

CHLOROFORM.—2s. 4½d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHERS.—S.G. ·730—11d. to 1s. per lb., according to quantity; other gravities at proportionate prices.

FORMALDEHYDE, 40%.—37s. per cwt., in barrels, ex wharf.

GUAIACOL CARBONATE.—4s. 6d. to 4s. 9d. per lb.

HEXAMINE.—2s. 3d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchesters, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.

HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 2s. 5d. per lb.; potassium, 2s. 8½d. per lb.; sodium, 2s. 7½d. per lb., in 1 cwt. lots, assorted.

IRON AMMONIUM CITRATE.—B.P., 2s. 8d. to 2s. 9d. per lb. Green, 2s. 10d. to 3s. per lb. U.S.P., 2s. 7d. to 2s. 10d. per lb.

IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.

IRON QUININE CITRATE.—B.P., 8¾d. to 9¼d. per oz., according to quantity.

MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.

MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.

MENTHOL.—A.B.R. recrystallised B.P., 17s. 6d. per lb. net; Synthetic, 9s. 6d. to 11s. per lb.; Synthetic detached crystals, 10s. to 11s. per lb., according to quantity; Liquid (95%), 9s. per lb.

MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, crystals, 8s. 4d. to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.; Corrosive Sublimate, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide, 7s. 8d. to 7s. 9d. per lb.; Persulph, B.P.C., 6s. 11d. to 7s. per lb.; Sulph. nig., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 6d. to 1s. 8d. per lb.

METHYL SULPHONAL.—18s. 6d. to 20s. per lb.

METOL.—9s. to 11s. 6d. per lb. British make.

PARAFORMALDEHYDE.—1s 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb.

PHENACETIN.—3s. 2½d. to 3s. 9d. per lb.

PHENAZONE.—5s. 11d. to 6s. 1½d. per lb.

PHENOLPHTHALEIN.—5s. 11d. to 6s. 1½d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—104s. per cwt., less 2½ per cent.

POTASSIUM CITRATE.—B.P.C., 2s. 6d. per lb. in 28 lb. lots. Smaller quantities 1d. per lb. more.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 5½d per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins

RESORCIN.—2s. 10d. to 3s. per lb., spot.

SACCHARIN.—43s. 6d. per lb.

SALOL.—2s. 3d. to 2s. 6d. per lb.

SODIUM BENZOATE B.P.—1s. 8d. to 1s. 11d. per lb.

SODIUM CITRATE, B.P.C., 1911, AND U.S.P. VIII.—2s. 2d. per lb., B.P.C. 1923, and U.S.P. IX—2s. 6d. per lb. Prices for 28 lb. lots. Smaller quantities 1d. per lb. more.

SODIUM FERROCYANIDE.—4d. per lb., carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—100s. per cwt. Crystals, 5s. per cwt. extra.

SODIUM SALICYLATE.—Powder, 2s. 2d. to 2s. 3d. per lb. Crystal, 2s. 3d. to 2s. 4d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d. per lb.

SODIUM SULPHIDE, ANHYDROUS.—£27 10s. to £29 10s. per ton, according to quantity. Delivered U.K.

SULPHONAL.—9s. 6d. to 10s. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 3d. per lb.

THYMOL.—Puriss, 7s. 9d. to 8s. 6d. per lb., according to quantity. Firmer. Natural, 12s. per lb.

Perfumery Chemicals

ACETOPHENONE.—7s. per lb.

AUBEPINE (EX ANETHOL).—12s. per lb.

AMYL ACETATE.—2s. 6d. per lb.

AMYL BUTYRATE.—5s. per lb.

AMYL CINNAMIC ALDEHYDE.—12s. per lb.

AMYL SALICYLATE.—3s. per lb.

ANETHOL (M.P. 21/22° C.).—6s. 6d. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.

BENZYL BENZOATE.—2s. 3d. per lb.

CINNAMIC ALDEHYDE NATURAL.—13s. 3d. per lb.

COUMARIN.—8s. 3d. per lb.

CITRONELLOL.—10s. 6d. per lb.

CITRAL.—8s. per lb.

ETHYL CINNAMATE.—6s. 6d. per lb.

ETHYL PHTHALATE.—2s. 9d. per lb.

EUGENOL.—10s. per lb.

GERANIOL (PALMAROSA).—19s. per lb.

GERANIOL.—7s. 6d. to 10s. per lb.

HELIOTROPINE.—7s. per lb.

ISO EUGENOL.—12s. per lb.

LINALOL.—Ex Bois de Rose, 12s. per lb. Ex Shui Oil, 10s. per lb.

PHENYL ETHYL ACETATE.—11s. per lb.

PHENYL ETHYL ALCOHOL.—9s. 6d. per lb.

RHODINOL.—48s. per lb.

SAFROL.—2s. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN, EX CLOVE OIL.—13s. to 15s. per lb. Ex Guaiacol, 13s. to 14s. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. per lb.

ANISE OIL.—4s. 3d. per lb.

BERGAMOT OIL.—13s. per lb.

BOURBON GERANIUM OIL.—17s. 6d. per lb.

CAMPHOR OIL, WHITE.—16os. per lb.

CASSIA OIL, 80/85%.—4s. 9d. per lb.

CINNAMON OIL LEAF.—7s. 9d. per oz.

CITRONELLA OIL.—Java, 2s. 11d. per lb., c.i.f. U.K. port; pure, Ceylon, 2s. 8d. per lb.

CLOVE OIL (90/92%).—7s. 6d. per lb.

EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%.—1s. 9d. per lb.

LAVENDER OIL.—Mont Blanc, 38/40%, 12s. 3d., per lb.

LEMON OIL.—8s. per lb.

LEMONGRASS OIL.—4s. per lb.

ORANGE, SWEET.—12s. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.*

London, January 30, 1930.

THERE has been very little change in price during the current week, but business has been fairly brisk both for home and export.

General Chemicals

ACETONE is unchanged and in steady demand at £71 10s. to £80 per ton, according to quantity.

ACETIC ACID is in good demand at £36 10s. per ton for 80% technical and £37 10s. per ton for 80% edible.

CITRIC ACID is still rather slow, with price at about 2s. 1d. per lb., less 5%.

ACID LACTIC is steady at £43 per ton for 50% by weight, and in active demand.

ACID OXALIC is unchanged at £30 7s. 6d. to £32 per ton according to quantity, and the improved demand continues.

ACID TARTARIC.—There is a distinct improvement in the demand, with price steady at about 1s. 3½d to 1s. 3¾d. per lb., less 5%.

ALUMINA SULPHATE is unchanged and firm at about £8 to £8 5s. per ton for 17% to 18% iron-free quality.

ARSENIC is still slow at about £16 5s. to £16 10s. per ton f.o.r. mines.

BORAX is firm and unchanged at the recently advanced prices.

CREAM OF TARTAR.—The improved inquiry continues, with price firm at about £104 per ton.

COPPER SULPHATE.—Firm and unchanged at £28 per ton, less 5%.

FORMALDEHYDE is steady and in regular demand at £36 per ton.

LEAD ACETATE.—White, at about £44 per ton. Brown, about £43 per ton, and in steady demand.

LEAD NITRATE is unchanged and steady at about £33 per ton.

LIME ACETATE is unchanged.

LITHOPONE is steady at £19 15s. to £23 per ton, according to grade and quantity.

POTASSIUM CARBONATE.—£27 per ton for 96% to 98% arsenic-free quality, and in steady demand.

POTASSIUM PERMANGANATE is firm and in good steady demand at 5½d. per lb. for B.P. needle crystals.

SODIUM ACETATE remains steady at about £21 10s. to £22 per ton.

SODIUM BICHROMATE is unchanged and firm at 3⅜d. per lb.

SODIUM HYPOSULPHITE.—Commercial crystals at £8 10s. to £9 per ton. Photographic crystals £14 to £15 per ton.

SODIUM NITRITE.—£20 per ton, and in steady demand.

SODIUM PRUSSIATE.—Very firm at 4¾d. to 5¼d. per lb., according to quantity.

SODIUM SULPHIDE.—Unchanged, continues very firm.

TARTAR EMETIC.—Rather slow at 11d. per lb.

ZINC SULPHATE.—Steady at about £13 10s. per ton.

Coal Tar Products

Although the coal tar product market is quiet, prices remain firm, with a stiffening in the price of motor benzol.

MOTOR BENZOL is quoted at about 1s. 5½d. to 1s. 6d. per gallon f.o.r.

SOLVENT NAPHTHA remains at about 1s. 2½d. to 1s. 3d. per gallon f.o.r.

HEAVY NAPHTHA is unchanged at about 1s. 1d. per gallon f.o.r.

CREOSOTE OIL is unchanged at 3d. to 3½d. per gallon f.o.r. in the North, and at 4d. to 4½d. per gallon in London.

NAPHTHALENES.—The firelighter quality is quoted at £3 10s. to £3 15s. per ton, the 74/76 quality at £4 to £4 5s. per ton, and the 76/78 quality at about £5 per ton.

PITCH is unchanged, at a nominal figure of 47s. 6d. per ton f.o.b. East Coast Port.

Nitrogen Products

Sulphate of Ammonia.—Export.—Buyers seem disposed to hold off and generally the market is quiet. It is hoped, however, that matters will improve with the approach of the spring season. Meantime prices are inclined to sag, to-day's value being about £8 5s. per ton f.o.b. U.K. ports in single bags for neutral quality.

Home Trade.—There has been quite a brisk demand this week and substantial orders have been placed for prompt delivery. The continuance of the mild weather should encourage country merchants to send in their orders to ensure having supplies on the spot for early requirements.

Nitrate of Soda.—The nitrate market continues very quiet, and stocks of the product are increasing. Buyers of this commodity are also holding off.

Latest Oil Prices

LONDON, January 29.—LINSEED OIL was steady but slow. Spot ex mill, £44 10s.; February, £40; March-April, £38 15s.; and May-August, £38 12s. 6d., naked. RAPE OIL was quiet. Crude extracted, £40; technical refined, £41 10s., naked, ex wharf. COTTON OIL was steady. Egyptian crude, £29; refined common edible, £34; and deodorised, £36, naked, ex mill. TURPENTINE was quiet. American, spot, 42s. 9d.; February-April, 43s. 3d. per cwt.

HULL.—LINSEED OIL.—Spot, £43 7s. 6d.; January, £43 5s.; February, £41 7s. 6d.; March-April, £39 12s. 6d.; May-August, £39 7s. 6d. per ton, naked. COTTON OIL.—Egyptian crude, spot £28; edible refined, spot, £31 10s.; technical, spot, £30 15s. deodorised, spot, £33 10s. per ton, naked. PALM KERNEL OIL.—Crude, 5½ per cent., spot, £31 10s. per ton, naked. GROUNDNUT OIL.—Crushed-extracted, spot, £34 10s.; deodorised, spot, £38 10s. per ton, naked. SOYA OIL.—Extracted and crushed, spot, £30 10s.; deodorised, spot, £34 per ton. RAPE OIL.—Crushed-extracted, spot, £39 10s.; refined, spot, £41 10s. per ton. TURPENTINE, CASTOR OIL and COD OIL unaltered.

South Wales By-Products

THERE is very little change in South Wales by-product activities. Pitch sales for delivery in the autumn have been made, but the general demand is slow, with quotations ranging from 48s. to 49s. per ton, delivered. Road tar is in steady but moderate request at 11s. to 14s. per 40-gallon barrel. Solvent and heavy naphtha are unchanged in price, solvent being in moderate demand and heavy slow. Creosote is weak at 3½d. to 4½d. per gallon, while motor benzol is unchanged. Patent fuel and coke exports have brightened, particularly from Swansea. Patent fuel prices are unchanged at 22s. to 22s. 6d., ex-ship Cardiff, and 1s. to 1s. 6d. less ex-ship Swansea and Newport. Coke, furnace and foundry grades are unchanged at Cardiff, Swansea and Newport.

Scottish Coal Tar Products

INTEREST during the week has been centred on the tar acid group of products, but there has been no alteration in prices. Refined tar continues to be in fair demand, while pitch is scarce and dear.

Cresylic Acid.—There have been several inquiries on the market during the week, and producers are short for prompt delivery. Prices remain unaltered as follows:—Pale 99/100%, 1s. 10½d. to 2s. 0½d. per gallon; pale 97/99%, 1s. 9d. to 1s. 10d. per gallon; dark 97/99%, 1s. 7½d. to 1s. 8½d. per gallon; high boiling, 1s. 9½d. to 1s. 11½d. per gallon, all f.o.r. works in buyers' packages.

Carbolic Sixties.—Production is almost negligible, and value is nominal at about 2s. 3d. to 2s. 5d. per gallon.

Creosote Oil.—Export orders are required before there can be any appreciable alteration in stocks. Prices are weak as follows:—Specification oil, 4d. to 4¼d. per gallon; gas works ordinary, 2⅞d. to 3⅜d. per gallon; washed oil, 3d. to 3½d. per gallon, all ex works.

Coal Tar Pitch is extremely scarce in this district. Producers of good grades can obtain 52s. 6d. to 55s. per ton, ex works in wagon loads, while export price is purely nominal at about 47s. 6d. to 50s. per ton, f.a.s. Glasgow.

Blast Furnace Pitch is steady and in good demand at 30s. per ton, f.o.r. works for home trade. The export price remains at 35s. per ton, f.a.s. Glasgow.

Refined Coal Tar.—Values have definitely settled down at about 3⅞d. to 4⅛d. per gallon naked at works.

Blast Furnace Tar remains quiet at 2¾d. per gallon filled into buyers' packages at works.

Crude Naphtha is quiet at 4¾d. to 5¾d. per gallon.

Water White Products.—There has been a better demand for motor benzole, which is commanding about 1s. 5¾d. to 1s. 6¼d. per gallon. 90/160 and 90/190 solvents remain unaltered at 1s. 1¾d. to 1s. 2¼d. per gallon and 11½d. to 1s. 0½d. per gallon respectively, all at works in bulk quantities.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, January 29, 1930.

THE heavy chemical market, so far as local inquiry is concerned, has been rather quiet during the past week, but there is still quite good inquiry going around for export business. There are no changes in prices of any importance to record.

Industrial Chemicals

ACETONE, B.G.S.—£71 10s. to £80 per ton, ex wharf, according to quantity. Inquiry remains satisfactory.

ACID ACETIC.—This material is still scarce for immediate supply but prices remain unchanged as follows: 98/100% glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystals, granulated or small flakes, £30 per ton. Powder, £32 per ton, packed in bags, carriage paid U.K. stations. There are a few fairly cheap offers made from the Continent.

ACID CARBOLIC, ICE CRYSTALS.—Quoted 8d. per lb. delivered.

ACID CITRIC, B.P. CRYSTALS.—Quoted 2s. per lb., less 5%, ex store, prompt delivery. Rather cheaper offers for early delivery from the Continent.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality 4s. per carboy. Dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.

ACID NITRIC, 80° QUALITY.—£24 10s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—On offer at about 3¼d. per lb., ex store. Offered from the Continent at 3¼d. per lb., ex wharf.

ACID SULPHURIC.—£2 15s. per ton, ex works, for 144° quality; £5 15s. per ton for 168°. Dearsenicated quality, 20s. per ton extra.

ACID TARTARIC, B.P. CRYSTALS.—Quoted 1s. 4d. per lb., less 5%, ex wharf. On offer for prompt delivery from the Continent at 1s. 4½d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE.—Quoted at round about £7 10s. per ton, ex store.

ALUM, LUMP POTASH.—Now quoted £8 7s. 6d. per ton, c.i.f. U.K. ports. Crystal meal about 2s. 6d. per ton less.

AMMONIA, ANHYDROUS.—Quoted 7½d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump quality quoted £36 per ton. Powdered, £38 per ton, packed in 5 cwt. casks, delivered U.K. stations or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.

ANTIMONY OXIDE.—Rather easier and Spot material now obtainable at round about £34 per ton, ex wharf. On offer for prompt shipment from China at £30 per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Quoted £18 per ton, ex wharf, prompt despatch from mines. Spot material still on offer at £19 15s. per ton, ex store.

BARIUM CHLORIDE.—In good demand and price about £11 per ton, c.i.f. U.K. ports. For Continental material price would be £10 per ton, f.o.b. Antwerp or Rotterdam.

BLEACHING POWDER.—British manufacturers' contract price to consumers unchanged at £6 12s. 6d. per ton, delivered in minimum 4 ton lots. Continental now offered at about the same figure.

CALCIUM CHLORIDE.—Remains unchanged. British manufacturers' price, £4 15s. per ton to £5 5s. per ton, according to quantity and point of delivery. Continental material on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Now quoted £35 per ton, ex store. Continental material on offer at about £34 per ton, ex wharf.

GLAUBER SALTS.—English material quoted £4 10s. per ton, ex station. Continental on offer at about £3 5s. per ton, ex wharf.

LEAD, RED.—Price now £37 10s. per ton, delivered buyers' works.

LEAD, WHITE.—Quoted £37 10s. per ton, c.i.f. U.K. ports.

LEAD ACETATE.—White crystals quoted round about £39 to £40 per ton, ex wharf. Brown on offer at about £2 per ton less.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store. In moderate demand.

METHYLATED SPIRIT.—Industrial quality 64 O.P. quoted 1s. 4d. per gallon, less 2½%, delivered.

POTASSIUM BICHROMATE.—Quoted 4⅞d. per lb. delivered U.K. or c.i.f. Irish ports, with an allowance for contracts.

POTASSIUM CARBONATE.—Spot material on offer at £26 10s. per ton, ex store. Offered from the Continent at £25 5s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 99¾/100%.—Powder quoted £25 10s. per ton, ex wharf. Crystals 30s. per ton extra.

POTASSIUM NITRATE.—Refined granulated quality quoted £19 2s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 5¼d. per lb., ex wharf.

POTASSIUM PRUSSIATE (YELLOW).—Spot material quoted 7d. per lb., ex store. Offered for prompt delivery from the Continent at about 6¾d. per lb., ex wharf.

SODA, CAUSTIC.—Powdered, 98/99%, £17 10s. per ton in drums, £18 15s. per ton in casks. Solid, 76/77%, £14 10s. per ton in drums, and £14 12s. 6d. per ton for 70/75% in drums, all carriage paid buyers' stations, minimum 4-ton lots, for contracts 10s. per ton less.

SODIUM BICARBONATE.—Refined recystallised, £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3⅝d. per lb., delivered buyers' premises with concession for contracts.

SODIUM CARBONATE. (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality 27s. 6d. per ton extra. Light soda ash £7 13s. per ton, ex quay, minimum 4-ton lots with various reductions for contracts.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4-ton lots. Prices for this year unchanged.

SODIUM NITRATE.—Chilean producers are now offering at £9 9s. per ton, carriage paid buyers' sidings, minimum 6-ton lots, but demand in the meantime is small.

SODIUM PRUSSIATE.—Quoted 5¼d. per lb., ex store. On offer at 5d. per lb., ex wharf, to come forward.

SODIUM SULPHATE (SALTCAKE).—Prices 55s. per ton, ex works, 57s. 6d. per ton delivered for unground quality. Ground quality 2s. 6d. per ton extra.

SODIUM SULPHIDE.—Prices for home consumption. Solid, 60/62%, £9 15s. per ton. Broken, 60/62%, £10 15s. per ton. Crystals, 30/32%, £7 17s. 6d. per ton, all delivered buyers' works on contract, minimum 4-ton lots. Special prices for some consumers. Spot material 5s. per ton extra.

SULPHUR.—Flowers, £12 per ton; roll, £10 10s. per ton; rock, £10 7s. 6d. per ton; ground American, £9 5s. per ton, ex store.

ZINC CHLORIDE, 98%.—British material offered at round about £20 per ton, f.o.b. U.K. ports.

ZINC SULPHATE.—Quoted £10 per ton, ex wharf.

NOTE.—Please note that the above prices are for bulk business and are not to be taken as applicable to small parcels.

Cuba as a Chemical Market

Chemical Imports over Four Millions

CUBA at present is a market for over £4,000,000 worth of chemicals annually. It is believed that the United States has more than half of this trade, with France, Germany, and Great Britain the leading competitors. Approximately two-thirds of the total import of chemicals enters the port of Habana or its vicinity. A few sugar mills import fertilisers and industrial chemicals and order the shipments made to ports near where they are located, which, accordingly, are listed in the Cuban tariff classification as goods and machinery necessary for the manufacture of sugar. In fact, under the classifications which have been adopted in Cuban statistics up to 1928, it has been difficult to segregate the various types of chemicals.

Nearly all the chemicals imported into Cuba fall under six or seven classes—industrial chemicals imported either in the raw or manufactured state, extracts for dyeing, paints and varnishes, fertilisers, soaps and materials for soap making, and pharmaceutical preparations. The imports of none of these classes have shown a tendency to increase under the new tariff, which came into effect in October, 1927, except those containing finished goods on which high duties have not been placed. In most cases there has been only an increased importation of raw products, the mixing and combinations being done in Cuba by chemical importers, pharmaceutical houses, and fertiliser distributors.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, January 30, 1930.

The weakness that has been noticeable of late in one or two of the acid products seems to have subsided for the time being, and the majority of the principal lines in the chemical market here maintain a steady to firm front. The demand for chemicals during the past week has been of moderate extent in most instances, though contract deliveries in some sections are on a fair scale, and there is a quietly steady inquiry about for spot lots.

Heavy Chemicals

Caustic soda fully retains its firmness and the buying movement in respect of this material keeps up; quotations on the basis of contract parcels range from £12 15s. to £14 per ton, according to quality. A fair business is going through in the case of bichromate of soda, which is well held at 3⅜d. per lb., this figure being subject to rebates according to quantity. With regard to alkali, the demand in this section of the market is on quietly steady lines, with offers still in the neighbourhood of £6 per ton. There is a moderate inquiry about for chlorate of soda, offers of which are firm on the revised basis of from £25 to £26 15s. per ton for crystals, ex store and according to quantity. Phosphate of soda has met with only a comparatively quiet demand this week, but prices are steady at about £11 10s. per ton for the dibasic quality. Bicarbonate of soda is firm at £10 per ton in contracts, and a fair amount of business in this material is going through. Prussiate of soda is moving off fairly well and the price position is fully maintained, current values ranging from 4⅜d. to 5¼d. per lb., according to quantity. The demand for hyposulphite of soda is on quiet lines, but offers of this material are held at round £9 per ton for the commercial grade and about £15 for the photographic. Sulphide of sodium meets with a moderate inquiry at from £10 to £14 per ton for the 60–65 per cent. concentrated solid quality, and from £8 2s. 6d. to £9 2s. 6d. per ton for the commercial material.

In the potash section, bichromate is in fair request and quotations are quite steady on the basis of 4⅜d. per lb. Permanganate of potash is rather quiet, but values are about held at round 5¼d. per lb. for the commercial quality and 5½d. for the B.P. A moderate business is going through in the case of chlorate of potash, which is on offer at from about £26 to £28 10s. per ton. Caustic potash is fairly steady at the moment at about £31 per ton, although not a great deal of business has been reported during the past week. Yellow prussiate of potash is firm and in quietly steady demand at from 6¾d. to 7¼d. per lb. Carbonate of potash ranges from about £26 to £26 5s. per ton and buying interest in this material is on moderate lines.

Arsenic is still relatively quiet, but at about £16 per ton at the mines for white powdered, Cornish makes, there has been little alteration in price levels. Sulphate of copper is reasonably steady at the moment and a moderate trade in this is going through. The lead compounds are rather quiet, with nitrate at from £33 to £33 10s. per ton, and brown and white acetate at £38 10s. and £39. There is a quiet demand about in the case of the acetates of lime, values of which are fairly firm, the brown material being quoted here during the past week at up to about £7 15s. per ton and the grey at about £16.

Acids and Tar Products

Oxalic acid is steadily at £1 13s. per cwt., ex store, although the demand is not particularly brisk. Acetic acid is moving off still in fairly satisfactory quantities and values are firm at £66 per ton for the glacial quality and about £36 for the commercial 80 per cent. strength. With regard to tartaric acid, the demand this week has been rather slow, but at around 1s. 3½d. per lb. there has been no further change in the price position. Citric acid seems also to be steadier than of late, though offers of this are still at about 1s. 11¼d. per lb.

A quiet business is being done in the pitch section of the by-products market at 47s. 6d. per ton, f.o.b. Creosote oil is only in moderate request and export buyers are still holding aloof; current quotations are at 3⅜d. to 4¼d. per gallon, naked. Solvent naphtha is quoted at 1s. 2d. to 1s. 2½d. per gallon, and a quiet trade is going through. Crude carbolic is firm at about 2s. 7d. per gallon, naked, with crystals at 7½d. per lb., in contracts.

Company News

Commercial Gas Co.—The annual general meeting will be held on February 13, at which the directors will recommend the payment of a final dividend on the ordinary stock at the rate of 7 per cent. per annum, less income tax, making with the interim dividend paid 6 per cent. for the year, the same as for 1928.

Gas Light and Coke Co.—The accounts for the year ended December 31, 1929, show that the balance to the credit of the net revenue account will enable the directors to recommend the payment of a final dividend on the ordinary stock at the rate of £5 12s. per cent., making a total of £5 12s. per cent., carrying forward £145,290. The final dividend for 1928 was at the same rate on the ordinary stock, making a total of £5 11s., and the sum of £158,658 was carried forward.

Chemical Bank and Trust Co., New York.—The statement of condition as of December 31 last, shows: Assets: Loans and discounts, $220,757,467.29; U.S. bonds and certificates, $10,334,303.94; other bonds and investments, $21,238,095.54; banking houses, $1,759,100.37; acceptances, $30,253,718.70; cash and due from banks, $137,442,159.18; other assets, $1,387,236.18; total, $423,172,081.20. The liabilities include capital stock, surplus and undivided profits, $37,017,677.55; reserved for dividend, $675,000.00; reserved taxes, interest, etc., $1,535,846.17; acceptances, $31,494,796.65; acceptances of other banks sold with our endorsement, $12,741,632.04; other liabilities, $601,469.15. Deposits include individuals and banks amounting to $339,105,659.64. Total, $423,172,081.20.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

Chemicals, Etc.—A commission agent established in Santiago de Cuba is desirous of obtaining agencies from manufacturers and exporters of refined vegetable oils—such as soya bean oil, glycerine—and analytical, pharmaceutical and commercial chemicals (Reference No. 104).

Manchester and London Fuel Conferences

A meeting of the members of the Institute of Fuel has been arranged in conjunction with the Society of Chemical Industry to be held at the Engineer's Club, Manchester, on Friday, February 7, when a paper will be presented on "The Fundamental Problems of Flue Gas Purification," by Professor M. W. Travers (vice-president), and will be open for discussion by members of both societies and their friends. The chair will be taken by Dr. R. H. Pickard.

The next meeting of the Institute of Fuel in London will be held in the rooms of the Chemical Society, Burlington House, on Wednesday, February 12, when a paper will be presented on "Submerged Combustion," by C. Featherstone Hammond, and will be open for discussion by members and their friends. The chair will be taken by Dr. F. A. Freeth.

Exploration for Spanish Potash Deposits

The existence of potassium salts in waters of the salt deposits of Olaz, near the city of Pamplona, created an interest on the part of the Spanish Government in 1928, and in the hope of locating a potash basin the Government, by Royal Order of July 27, 1928, reserved a zone in that province for special investigation. In pursuance of the investigations in connection with this zone, the Government now proposes to make soundings of the Navarre potassium basin and has decided to dispense with the ordinary formalities of bidding for the work. The drilling will be to a depth of 600 metres and will be done at a place some 500 metres to the south-west of the salt mines of Pamplona. The granting of the contract for drilling will be in charge of the Minister of Interior.

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sound fire protection if, when that outbreak of fire occurs, prompt extinguishment is to be assured. To have fire extinguishers at hand is not sufficient unless they are of the right type for the risk which they protect. An appliance may be suitable, from every point of view, for installation in an office, but it may be worse than useless in another part of the works.

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Telegrams: Foamite, Wesdo, London.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Deed of Arrangement

[The following deeds of arrangement with creditors have been filed under the Deeds of Arrangement Act, 1914. Under this Act it is necessary that private arrangements other than those executed in pursuance of the Bankruptcy Act shall be registered within seven clear days after the first execution by the debtor or any creditor. These figures are taken from the affidavit filed with the registered deed, but may be subject to variation on realisation.]

HUTCHISON, James Cecil, Nemlin Chemical Works, Albert Road, Whitefield, 68, Bury New Road, Besses o'th' Barn, and 9, Poplar Avenue, Levenshulme, chemical merchant and manufacturer. (D.A., 1/2/30.) Dated January 16, filed January 22. Trustee, C. T. Wood, 69, Corporation Street, Manchester. Liabilities unsecured, £443; assets, less secured claims, £215.

Receivership

ELECTRICAL AND CHEMICAL EBONITE CO., LTD. (R., 1/2/30.) C. F. Palmer, of 86/88, Queen Victoria Street, E.C.4, was appointed receiver on December 30, 1929, under powers contained in debenture dated May 27, 1925.

Mortgages and Charges

*[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]*

ROSARIO NITRATE CO., LTD., London, E.C. (M., 1/2/30.) Registered January 14, letter of hypothecation to Anglo South American Bank, securing all moneys due or to become due to the Bank; charged on stocks of iodine. *——. July 12, 1929.

Satisfactions

BRITISH CELANESE, LTD. (late BRITISH CELLULOSE AND CHEMICAL MANUFACTURING CO., LTD. and BRITISH CELLULOSE AND CHEMICAL MANUFACTURING (PARENT) CO., LTD.), London, W. (M.S., 1/2/30.) Satisfactions registered November 13, £47,310, part of amounts registered August 24, 1922, and July 6, 1923.

BRITISH OIL AND LUBRICANTS, LTD., London, S.W. (M.S., 1/2/30.) Satisfaction registered January 15, £500, registered July 5, 1928.

London Gazette, &c.

Companies Winding Up Voluntarily

BATTRUM OIL AND REFINERY CO., LTD. (C.W.U.V., 1/2/30.) By special resolution, January 22. G. T. Lupson, the Outer Temple, 222, Strand, London, W.C.2, appointed as liquidator.

New Companies Registered

INDUSTRIAL SCIENTISTS, CONSULTANTS AND FINANCE CORPORATION, LTD. Registered January 27. Nominal capital, £100 in £1 shares. Industrial scientists, scientific advisers, consultants, researchers and investigators, etc. Directors: G. Martin (managing director), Woodleigh, Barrington Road, Wembley, and L. C. Stewart.

W. G. JENKINS, LTD. Registered January 23. Nominal capital, £100 in £1 shares. Consulting, analytical, manufacturing, pharmaceutical and general chemists, etc. Directors: W. G. Jenkins, "Cartref," Keith Road, Hayes, Middlesex, Mrs. Mary E. Jenkins, and I. G. Thomas.

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SHELBONITE, LTD. Registered January 25. Nominal capital, £1,000 in 1s. shares. Casein manufacturers and workers, etc. Directors: Mrs. Caroline Camidge, Montague House, Crystal Palace Road, London, S.E.19, J. N. Waring and W. A. Bowden.

Sir T. Holland's Plan to Prevent War

SIR THOMAS HOLLAND, Vice-Chancellor and Principal of Edinburgh University, put forward in the Trueman Wood Lecture to the Royal Society of Arts, on Wednesday, a suggested method of stopping war. His proposal was that the signatories to the Pact of Paris should prohibit the export of mineral products to any nation which violated the multilateral treaty. The scheme should be initiated, said Professor Holland, by agreement between the British Empire and the United States, which between them owned some two-thirds of the known workable deposits of minerals and commercially controlled some three-quarters of them. No single country was self-sufficient as regards the variety and the quantity of the mineral resources that were required, either for the maintenance of civil activities in peace time or, therefore, for meeting the much greater requirements of war. It would be a rash venture for any power to undertake war if either the British Empire or the United States refused to permit the export of minerals to the adventurer, and any country that attempted to break the Pact of Paris would be paralysed if these two agreed to withhold mineral supplies. Professor Holland suggested, therefore, that each country should add a simple rider to the Kellogg Treaty, giving its Government the power, if and when necessary, to prohibit the export of mineral products to any country that broke the peace with any member of the Pact. The very existence of any such power would be in itself sufficient automatically to enforce submission of the matters in dispute to the International Court of Justice.

New Benn Books

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Chilean Nitrate in Spain

AN article in a Spanish newspaper attributes to the Spanish Ambassador to Chile the statement tha tnegotiations are being carried on between Spain and Chile on the proposal that the Spanish Government becomes the sole distributor of all Chilean nitrate consumed in Spain. According to this report, Spain takes annually 150,000 metric tons of this product and the consumption is expected to show substantial increase.